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Urban Juxtaposition: A Precedent Analysis of New Urbanism in Denver, Colorado

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URBAN JUXTAPOSITION:

A Precedent Analysis of New Urbanism in Denver, Colorado

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DEFENDED ON 03/30/16

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ABSTRACT:

The New Urbanist movement embraces neotraditional design principles in an attempt to create a more sustainable urban form; however, some New Urbanist developments, and to some extent their principles, are not progressive enough to make legitimate claims of increasing environmental and social sustainability. In Denver, Colorado New Urbanist neighborhoods are inconsistent with New Urbanist principles; the Stapleton neighborhood, Highland Garden Village, and Riverfront Park are three New Urbanist neighborhoods used in my precedent analysis in order to illustrate these inconsistencies. Riverfront Park accomplishes many of New Urbanisms principles and goals while the Stapleton neighborhood, the largest greyfield development in the country, lacks many New Urbanist principles in its implementation; primarily related to land use patterns, residential density, and transportation. My research concludes that discrepancies between municipalities and private developers, as well as national transportation standards and policies, have resulted in a compromise that limits the implementation of New Urbanist principles in New Urbanist developments. Historical frameworks, lagging policy change,

and our neoliberal free market have perpetuated a cycle of environmentally and socially unsustainable growth that needs to change in order for our built environment to continue growing into a more sustainable form.

KEYWORDS:

New Urbanism, Critique, Conventional Suburban Development, Traditional Neighborhood Design, Stapleton, Highland Garden Village, Riverfront Park, Denver, Colorado

Juxtaposition:

Noun

1. An act or instance of placing close together or side by side, especially for comparison or contrast.

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INTRODUCTION:

THE EVOLUTION OF SUBURBAN HOUSING AND DEVELOPMENT

Suburbia is a common nomenclature understood by the average American citizen, largely because suburban development has been culturally and historically situated in our built environment. Some define suburbia as “a low-density, residential environment on the outskirts of larger cities, occupied primarily by families of similar class and race, with plenty of trees and grass.”¹ However, there are components left out of this definition that are crucial to understanding the impacts of the suburban model on our environmental and social sustainability. Suburban developments often have significantly lower residential densities than their urban counterparts. These developments, often primarily located outside the urban fringe, locate residents far away from crucial services, amenities, and their place of work, which induce a dependence on the personal automobile.² Conventional suburban developments have tremendously impacted America’s social constructs of preferred living environments as well as our impact on the environment.³ In the 1970’s more people lived in suburbs than in urban centers, although this trend began to shift once the “baby boomers” finished raising their

1) Nicolaidis, Becky. *Introduction: Definitions and Historgraphy*. (The Suburb Reader, 2006) 9:7

2) Ibid.

3) William Fulton “The New Urbanism challenges Conventional Planning,” *Land Lines* 8 (1996) 4

families and as the preferences of younger generations began to draw them back to dense, walkable, and active cities.⁴

The proliferation of American suburbia, as well as cultural shifts, were not a spontaneous and sporadic phenomenon; it is rooted as far back London’s Romantic Movement in the 1800’s. These predecessors to American suburbia were designed to “harmonize with nature, with curvilinear roads, spacious parks and preserves, and rambling properties without fences.”⁵ This ideology was manifested in the mid-1850’s in Llewellyn Park, New Jersey, and Riverside, Illinois which set precedent for the evolution of the American Suburb. This type of development grew slowly in America until the 1930s when the New Deal Housing Program was implemented, “pumping federal money into the suburban housing market” and incentivizing Americans to buy homes in the proliferating suburbs; some would even argue that suburbia as we know it could not exist without the FHA’s interventions.⁶ In the 1970’s, these suburban developments began to experience “urbanizing tendencies of aging infrastructure and housing, and rising taxes and tenancy rates,” simultaneously, academia and practitioners began realizing the environmental toll that suburbia has had on the United States.

4) William Frey. “America’s Demography in the New Century: Aging Baby Boomers and New Immigrants as Major Players” *Santa Monica, CA: Milken Institute*. (2000) 52

5) Nicolaidis, *A thumbnail Sketch*, 2

6) Ibid.

The Costs of Sprawl correlates the location of development, and its residential density, to the developments' impacts on "infrastructure, housing, transportation, energy, environmental, and quality of life costs of sprawl," which influenced many to develop alternative solutions to housing.⁷

The location of suburban developments, the booming post-war economy, as well as expansive automobile infrastructure have made the United States transportation system largely "auto-centric."⁸ The auto-centric environment of the conventional American suburbs has had profound social and environmental impacts.⁹ Planning for the growth and expansion of cities has presented an unprecedented interdisciplinary challenge for architects, urban planners and many other professionals to address our environmental and social sustainability.¹⁰ In retrospect, the suburban model and FHA intervention was largely justified due to the huge populations returning from the recent war. The goal of the suburbs was to affordably house returning Americans and their families in an environment where they feel safe, welcome and at

7) Transit Cooperative Research Program. "The Costs of Sprawl-Revisited" *National Academy Press, Washington D.C.* (2000) 4-7

8) Nicolaides, *A thumbnail Sketch*, 2

9) Howard Frumkin. "Urban Sprawl and Public Health," *Public Health Reports*. 117 (2002) David Owen. *Green metropolis: why living smaller, living closer, and driving less are keys to sustainability*. (New York: Riverhead Book. (2009) Kent, J. L. & Thompson, S. "The Three Domains of Urban Planning for Health and Well-Being," *Journal of Planning Literature* 29:3 (2014) 239-256.

10) Chapin, Ross. *Pocket Neighborhoods: Creating Small-scale Community in a Large-scale World*. (Newtown, CT: Taunton. 2011) 34

home.¹¹ Interestingly enough, the suburban model sought to address and resolves the same problems we still see today in housing, such as issues of community, affordability, but lacked environmental concern.¹²

Our built environment has and always will be an emergent process that builds upon successes and learns from the failures of prior attempts. Even some of the most famous architects and planners in history have put forth some unsuccessful ideas. Frank Lloyd Wright wanted to create "Broadacre City" where every home would be a one-acre homestead, fostering a dependency on the automobile which, in his time, the negative impacts of sprawl were not fully understood. Le Corbusier wanted to create the "Radiant City" where sixty story high-rise buildings towered above a seamless expansion of green space.¹³ Le Corbusier's idea was never implemented in its purest form although less dense variations are present in Europe. We can learn something from both of these influential planners; Frank Lloyd Wright's sprawling city could increase demands for transportation, but his locality of urban agriculture would create strong social capital and local resilience.¹⁴ Le Corbusier knew that to account for rapidly growing populations he would have to implement a

11) Ibid.

12) Ibid.

13) Robert Fisherman, *Urban Utopias in the Twentieth Century: Ebenezer Howard, Frank Lloyd Wright, and Le Corbusier*. (Cambridge, Massachusetts: MIT Press..1982) 231

14) James Krohe, Jr. *Return to Broadacre City*. (Illinois Issues April 2000) 27.

high density plan, but as proven by research today, these extreme densities would have contributed to social isolation.¹⁵ They both aspired to create environmental and social sustainability but ended up at the extremes of this spectrum, sacrificing one for the other. There is no perfect solution; there are just stepping stones towards a more sustainable future.

15) Dennis McCarthy. "Residential Density, Social Overload, and Social Withdrawal" *Human Ecology* 6:3 (1978) 256

NEW URBANISM AND NEO-TRADITIONAL ENVIRONMENTS

The New Urbanism (NU) movement began in the 1980's as a response to post-WWII suburban planning. New Urbanists viewed what they saw as a sprawling, auto-centric suburban trend as an environmentally and socially unsustainable form of development that they argued resulted in the "congestion on arterial roads, a lack of meaningful civic life, the loss of open space, limited opportunities for children and others without cars, and a general discontent among suburbanites."¹⁶ The products of poorly-conceived planning prior to the 1940's, which continued through the 1980's in lesser forms, such as inadequate land management strategies, poor quality design, and exclusionary zoning, expansive suburban sprawl, were influential forces behind the New Urbanist movement and their charter principles.¹⁷

The charter of New Urbanism, a set of guiding principles for practitioners, critiques and responds to post WWII suburban planning using three categories: urban sprawl, lack of mobility, and deterioration of community. The first category describes the socio-environmental impacts of the suburban model. The second category encompasses the no-

16) Fulton. "Challenges Conventional Planning" 12

17) Wayne Davies. "New Urbanisms: From Neo-Traditional Neighbourhoods to New Regionalism Theme Cities: Solutions for Urban Problems," *Dordrecht: Springer*, 17:2 (2015) 61

tion of auto-centricity and lack of alternative transportation options in the suburbs. The third category describes the NU's claims of deteriorating community through alienating neighborhood design and automobile dependency.

New Urbanism uses what they call Traditional Neighborhood Design (TND) to address these issues of conventional suburban development. Their goal of achieving “authentic urbanism” through what they call traditional town planning includes a focus on the town center, which includes a variety of land uses such as civic, residential, recreation, commercial and retail as well as acting as activity center for social interaction and community.¹⁸ The town center is a crucial element of New Urbanist design because of its place-making approach that creates active pedestrian spaces designed to promote health and wellbeing. New Urbanists’ goals of reshaping the components of individual neighborhoods have several key features, such as having higher residential densities than traditional suburbs, designing safer and more accessible streets for the average pedestrian, implementing a human scale and a pedestrian-oriented environment, and having greater socioeconomic diversity than the conventional American suburb, all of which relate back to their goal of creating “authentic urbanism” through traditional town

18) Davies. “Theme Cities,” 25

planning principles.¹⁹ New Urbanism’s principles aim to enhance the environmental and social sustainability of neighborhoods.

I define environmental and social sustainability as follows: Environmental sustainability, in terms of development patterns including aspects of residential density and accessibility to service and amenities, has to do largely with decreasing resource consumption of the individuals. Resource consumption is largely a factor of transportation and density. In the United States, 28% of our energy consumption is used to transport people and goods. The personal automobile consumes 60% of the 28%.²⁰ This suggests a needed shift in our daily modes of transportation if we want to reduce energy consumption, ideas that are prominent in the charter of New Urbanism. This mode shift can be achieved by implementing more attractive and reliable forms of alternative transportation that are sustained with increased densities. Density would reduce the distance individuals must travel in order to access services and amenities, this concept is called “accessibility.”²¹ Higher accessibility effectively reduces Vehicle Miles Traveled (VMT) and thus reduces

19) Davies. “Theme Cities,” 26

20) National Research Council and National Academy of Engineering. “America’s Energy Future: Technology and Transformation.” Washington, DC: The National Academies Press, (2009)

21) Todd Litman, “Evaluating Accessibility for Transportation Planning: Measuring Peoples Ability to Teach Desired Goods and Activities,” *Victoria Transport Policy Institute* (2015) 3

greenhouse gas emissions.²² Accessibility not only has significant impacts on environmental sustainability but also on social sustainability.²³ Density and accessibility group large amounts of individuals in an active and vibrant space that provides the opportunity for greater social interaction.²⁴

Social Sustainability has been defined in many ways; a good starting point to understand this concept is as the creation of “community” and the presence of social equity. Social Life, a United Kingdom-based social enterprise that strives to improve human environments through commercial strategies, defines social sustainability as “a process for creating sustainable, successful places... by understanding what people need from the places they live and work.”²⁵ They go on to explain how social sustainability, and the pursuit of social equity, “combines design of the physical realm with design of the social world – infrastructure to support social and cultural life, social amenities, systems for citizen engagement and space for people and places to evolve.”²⁶

This definition closely relates to the production of community that New Urbanism seeks to create, but emphasizes social sustainability as a process rather than something

that can simply be designed. New Urbanism’s pursuit of community correlates to their ideals of creating active centers, with a variety of uses, and beautiful public spaces in hopes to develop community through these design solutions.

The ideals of achieving environmental and social sustainability are present in the charter principles of New Urbanism. This is significant because the movement has received significant critiques on the validity of their claims, which potentially undermines their movement’s objectives. I use, in a later section, the principles of New Urbanism and three precedent neighborhoods in Denver, Colorado to ground the truth of both critiques and claims of the movement. These charter canons and principles will be discussed in the next section.

22) Ibid.

23) Glen Bramley. “Urban form and social sustainability: The role of density and housing types” *Environment and Planning B: Planning and Design* 36 (2009) 30-48

24) Ibid.

25) S.Woodcraft. “Design for Social Sustainability,” *Social Life, London*. (2011) 2

26) Ibid.

NEW URBANISM PRINCIPLES AND CANONS

The charter of New Urbanism is broken down into three broad categories: The region, metropolis, city and town; The neighborhood, the district, and the corridor; The block, the street, and the buildings. The 27 main principles of New Urbanism within these three categories address two key problems in which the movement meant to solve: the spatial separation of land use; and the lack of mobility.²⁷ The first problem includes the ideas of mixing land uses and the creation of functional public spaces; the second problem includes the notion of compact development, accessibility and public transit.²⁸ In order to ground the claims of New Urbanism, I have distilled the charter's 27 principles into the eight categories that I will use to assess three new urbanist neighborhoods in Denver. These 8 categories will be discussed in the next section. The text blocks at the top of each category represent a single principles from the Charter of New Urbanism.

27) Emily Talen, "New Urbanism and the Culture of Criticism," *Urban Geography*, 21:4, (2000) 318-341
28) Ibid

WALKABILITY:

The Street, Block, and Network

2) The pattern of blocks and streets shall be compact and designed in a well-connected network for easy, safe and secure walkability.

New Urbanism's charter principles and canons identify walkability as having characteristics of "pedestrian friendly street design (buildings close to street; tree-lined streets; on street parking; narrow streets) with amenities located within a 10-minute walk of home and work."²⁹ As a metric, walkability can be evaluated by intersection density, pedestrian infrastructure, human-scale, low-vehicle speeds, and a well-managed streetscape.³⁰ Walkability primarily incorporates aspects of safety and aesthetics to indicate how likely an individual is to walk through that environment and feel comfortable. This is a crucial component of New Urbanism because of its impacts on accessibility, traditional neighborhood structure, and social sustainability; which requires high connectivity in order to use public spaces and access amenities.³¹

29) Congress for New Urbanism Charter Principles and Canons (1999) The Congress for the New Urbanism. Print

30) Jean-Christophe Foltête, "Urban layout, landscape features and pedestrian usage," *Landscape and Urban Planning, Elsevier*. 81:3 (2007) 225-234.

31) Lorinne Toit, "Does walking in the neighborhood enhance local sociability?" *Urban studies*, 44:9 (2007) 1677-1695

SUSTAINABILITY:

The Building and Infrastructure:

7) Renewable energy sources shall be used to reduce carbon and the production of greenhouse gases

New Urbanism's charter principles and canons identify sustainability as having "minimal environmental impact of development and its operations eco-friendly technologies; energy efficiency; local production; more walking, less driving."³² Sustainability can be measured in many ways, the New Urbanist charter principles and canons speak specifically to building performance, solar orientation, reliance on fossil fuels, alternative energy production and use, green infrastructure, with aspects of accessibility and mobility correlating with mode choice as values of a sustainable neighborhood.

COMPLETE STREETS AND "SMART" TRANSPORTATION:

The Street, Block, and Network

1. The design of streets and the entire right-of-way shall be directed at the positive shaping of the public realm in order to encourage shared pedestrian, bicycle and vehicular use.

New Urbanism's principles describe smart transportation as "a network of public transportation connecting cities, towns, and neighborhoods, pedestrian-friendly design that encourages a greater use of bicycles, roller blades,

32) Ibid.

scooters, and walking as daily transportation" as well as reduction in parking as qualities of a "smart" transportation system. An excerpt from the charter of New Urbanism describes how "a wide range of parking strategies shall be used to constrict the supply of parking in order to induce less driving and to create more human-scaled, amenable public space."³³ Having complete streets, which are safe and convenient for all modes of travel, is crucial to achieving this goal. A reduction in surface parking as well as having less than .6 parking spaces for every dwelling unit are also important for a "smart" transportation system, as well as having great impacts on emissions.³⁴

SMART LOCATION

The Neighborhood, Town and City

2) wherever possible, new development shall be sited on underutilized, poorly designed or already developed land. Sites shall be either urban infill or urban adjacent unless the building is rural in its program, size, scale and character; the preservation and renewal of historic buildings, districts and landscapes will save embodied energy, as well as contribute to cultural continuity; Brownfields shall be redeveloped, utilizing clean-up methods that reduce or eliminate site contaminants and toxicity."

New Urbanism's charter principles and canons describe smart location as developing in locations that are

33) Ibid.

34) Richard Willson "Parking Policy for Transit-Oriented Development: Lessons for cities, transit agencies, and developers." *Journal of Public Transportation* 8:5 (2005) 4. Eric Gantelet "The time Looking for a Parking Space: Strategies, Associated Nuisances and Stakes of Parking Management in France." *Association for European Transport and contributors* (2006) 6. Eric Gantelet, "The Impact of Car Parking Policies on Greenhouse Gas Emission," *Association for European Transport*. (2008) 3

underutilized, within existing urban context, ideally in economically distress areas, as well as areas that are undesirable such as greyfield or brownfield sites.³⁵ Developing in a smart location has positive environmental impacts as well as preserving undeveloped land. New Urbanists are heavy advocates of urban infill development rather than greenfield development. Infill development helps connect neighborhoods to existing transportation infrastructure as well as within access to existing services and amenities.

COMPACT AND DENSE

The Neighborhood, the district, and the corridor:

11) Neighborhoods should be compact, pedestrian friendly, and mixed-use.

New Urbanism's charter principles and canons state that "neighborhoods, towns and cities shall be as compact as possible, with a range of densities that are compatible with existing places and cultures and that hew tightly to projected growth rates and urban growth boundaries while promoting lively mixed urban places."³⁶ A minimum density of seven dwelling units per acre is required for LEED-ND certification, although not all New Urbanist neighborhoods are LEED-ND certified.³⁷ Compact and dense urban forms have a tremendous impact on environmental and social sustainability.³⁸

35) CNU, Charter Principles and Canons (1999)

36) Ibid.

37) Elissa Black "Green Neighborhood Standards from a Planning Perspective: The LEED for Neighborhood Development (LEED-ND)," *Focus*. 5:11. (2008)

38) Richard Haughey, "Higher-Density Development: Myth and Fact," *Washington, D.C.: ULI—the Urban Land Institute* (2005). Helen Jarvis, "Saving Space, Sharing Time: Integrated Infrastructures of Daily life in CoHousing," *Environment and Planning* 43 (2011) 560-577. Andy Kirby, "Redefining Social and Environ-

MIXED USE AND DIVERSITY

The Neighborhood, the district, and the corridor:

13) Within neighborhoods, a broad range of housing types and price levels can bring people of diverse ages, races, and incomes into daily interaction, strengthening the personal and civic bonds essential to an authentic community.

New Urbanism's charter principles and canons identify "a range of types, sizes, and prices in close proximity, a mix of shops, offices, apartments, and homes on site; mixed-use within neighborhoods, within blocks, and within buildings; diversity of people - of ages, classes, cultures, and races"³⁹ as goals of achieving diverse land uses, housing options and demographics within the community. Most New Urbanist developments achieve this goal, however I have found no thresholds for determining how diverse housing options are valued in New Urbanism.⁴⁰ Diversity in housing options and prices allows for greater socioeconomic diversity within the neighborhood. There are no measurable objectives for demographic diversity although it is a goal of New Urbanist principles.

mental Relations at the Eco-Village at Ithaca: A case study," *Journal of Environmental Psychology* 23, (2003) 323-332

39) Ibid.

40) Alex Zimmerman & Charles J. Kibert, "Informing LEED's next generation with The Natural Step," *Building Research & Information*, 35:6 (2007) 681-689,

ACCESSIBILITY

The Neighborhood, Town and City

1) The balance of jobs, shopping, schools, recreation, civic uses, institutions, housing, areas of food production and natural places shall occur at the neighborhood scale, with these uses being within easy walking distances or easy access to transit.

New Urbanism's charter principles and canons strive to achieve accessibility and connectivity through "interconnected street grid network disperses traffic & eases walking; transit, pedestrian, and bicycle systems should maximize access and mobility throughout the region while reducing dependence upon the automobile; range of uses and densities within a 10-minute walk."⁴¹ Accessibility and connectivity is primarily measured through transportation network connectivity in existing street networks, transit accessibility, cycling accessibility, complete streets, and access to services and amenities either internally or in the surrounding environment.⁴²

41) Ibid.

42) Litman, "Evaluating Accessibility." Jarrett Walker, "Human Transit: How Clearer Thinking about Public Transit Can Enrich Our Communities and Our Lives," Washington, DC: Island (2012) 45

TRADITIONAL NEIGHBORHOOD STRUCTURE

The Neighborhood, Town and City

7) Buildings, neighborhoods, towns and cities shall serve to maximize social interaction, economic and cultural activity, spiritual development, energy, creativity and time, leading to a high quality of life and sustainability.

New Urbanism's principles describe a traditional neighborhood structure as having an "emphasis on beauty, aesthetics, human comfort, and creating a sense of place; special placement of civic uses and sites within community; discernible center and edge, with public space at the center; and having a quality public realm."⁴³ A traditional neighborhood structure includes aspects of high quality active community spaces, integrating green space, maximizing accessibility and walkability, and striving to create an authentic sense of community, which have impacts on social sustainability.⁴⁴

43) Ibid.

44) Bramley, "Urban form and social sustainability" 30-48 . Kevin M. Leyden, "Social Capital and the Built Environment: The Importance of Walkable Neighborhoods," *American Journal of Public Health* 93:9 (2003) 1546-1551. Rodney Matsuoka, "People needs in the Urban Landscape: Analysis of Landscape and Urban Planning Contributions," *Landscape and Urban Planning* 84 (2007) 7-19 Lisa Wood, "Sense of Community and Its Relationship with Walking and Neighborhood Design," *Social Science and Medicine* 70, (2010) 1381-1390

CRITIQUES AND REBUTTALS

Before I begin my discussion on the critiques of New Urbanism, it is important to address two key points: first, that the principles of new urbanism are based on responding to the incremental process of our built environment, building on lessons learned from previous models; and second, we can only critique the praxis of New Urbanism rather than solely their ideas because this is where one can truly measure their effectiveness of enhancing sustainability as well as the validity of their claims.⁴⁵

The ideals of achieving environmental and social sustainability are present in the charter principles of New Urbanism; whether or not they achieve these goals are a topic of rigorous debate among scholars and professionals alike.⁴⁶ A lack of empirical investigation, specifically on NU developments, suggests that they do not have the evidence to make such claims, although New Urbanists would disagree; the validity of their claims will be discussed in the next section.⁴⁷

The physical environment produced by the majority of New Urbanist neighborhoods is not progressive enough in its transportation or land use standards either to truly combat contemporary issues of sustainability or to create a

45) Talen, "Culture of Criticism," 325-327

46) Ibid.

47) Jennifer Dill, "Evaluating the Sustainability of a New Urbanist Neighborhood," *Berkeley Planning Journal* 19 (2006) 59-78

significantly more environmentally and socially sustainable neighborhood pattern.⁴⁸ New Urbanism's evaluation system, LEED-ND, has too low of standards and several flaws within its metrics, such as the ability to be "gamed" for additional points, which allows the production of conventional suburbs with nontraditional facades and misleading advertising such as their invocation of community.⁴⁹ Also, the desire to combat the contemporary suburb by building on the metropolitan fringe and the rural has conflicting results with their principles as well as the potential creation of "new urban sprawl."⁵⁰

Alternative modes of transportation such as public transit have the capacity to thrive when properly designed and sufficiently funded; and are often more convenient than using a personal vehicle.⁵¹ The compact form of urban environments also shrinks ones' proximity to needed goods and services, as well as potential employment, which in turn makes alternative transportation options more convenient.⁵² The issue with New Urbanist neighborhoods is that they often lack the density and alternative transportation infrastructure to discourage "car-culture."

48) Dill, "Evaluating the Sustainability," 59-78. Kara Youngentob, "Is a New Urban Development Model building Greener Communities?" *Journal of Environment and Behavior* 37:6 (2005) 731-759

49) Jeremy Bray, Natasha McCurry, "Unintended Consequences: How the Use of LEED Can Inadvertently Fail to Benefit the Environment," *Journal of Green Building: Fall* 1:4 (2006) 152

50) Fulton, "Challenges Conventional Planning" 14

51) Robert Dunphy et al., "Ten Principles for Successful Development Around Transit," *Washington, D.C.: ULI—the Urban Land Institute* (2003) 4

52) Ibid.

There are many professionals and institutions that advocate for the principles of New Urbanism, while some scholars critique New Urbanism for being "a remodeled suburb that keeps real-estate values high."⁵³ One study concludes that there is a disconnect between principles and practice in transportation ideals; this study demonstrates that New Urbanist principles, when mixed with conventional roadway standards often result in auto oriented behavior.⁵⁴ In principle, the Congress for New Urbanism (CNU) advocates for reduced auto dependency but in practice, the relationship between New Urbanist neighborhoods and auto dependency is that they are not nearly urban enough to discourage this trend, as demonstrated by a case study of the Stapleton neighborhood which I will discuss in a later section. The built environment constructed in New Urbanist neighborhoods is not dense enough to mitigate this tendency, nor accessible enough to combat the results of a "car-culture" embedded into most Americans by the proliferation of our auto-centric environment.⁵⁵

In short, Cliff Ellis stated that New Urbanism is faulted on both political sides, by architects and planners for not being "sufficiently urban" as well as by "devotees of sprawl"

53) Song, Yan "New Urbanism and Housing Values: a disaggregate assessment" *Journal of Urban Economics* 54 (2003) 220

54) Wesley Marshall, "Understanding the impacts of integrating New Urbanist neighborhood and street design ideals with conventional traffic engineering standards: the case of Stapleton," *Journal of Urbanism* 8:2 (2015) 148-172

55) Hollie Lund, "Testing the Claims of New Urbanism: Local Access, Pedestrian Travel, and Neighboring Behaviors," *Journal of the American Planning Association*, 69:4 (2003) 414-429

who oppose higher densities than a traditional suburban development.⁵⁶ The bulk of criticism of New Urbanist neighborhoods, in a broad sense, largely has to do with whether or not there is empirical evidence to back up New Urbanist's claims; New Urbanism predominantly claims their communities are producing incremental change and are not suggesting a radical shift in culture or our built environment. Claims of community, decreased automobile dependency, and a more vibrant pedestrian realm have not been sufficiently researched and evaluated, only a few examples exist, specifically in New Urbanist neighborhoods. Therefore some believe New Urbanism lacks the credibility to make such claims.⁵⁷

If New Urbanist principles were not limited by the regulations of federal, state and local land use and transportation policies, then they could have the potential to produce more environmentally and, indirectly, socially sustainable neighborhoods.⁵⁸ New Urbanism has the potential to make a significant difference in lifestyle of individuals through their progressive principles; and the demand for New Urbanist developments is "25 and 40% of the market—which is not being met by conventional suburban development."⁵⁹ However, I fear that this demand will ultimately result in "New

Urban sprawl."

These uncertainties make "proponents and critics alike fear that widespread application of the movement's design principles apart from a regional context may simply cause suburban sprawl to be replaced by "New Urban" sprawl."⁶⁰ This fear of New Urban Sprawl is derived from the criticism that New Urbanist neighborhoods merely look urban, and that they function very similarly to suburbia.⁶¹ I will further discuss this discrepancy in a later section. The similarities between traditional suburbia and New Urbanism lie in their reliance on the automobile, segregated land use zones and their ideological and cultural affinities. In fact, "many New Urbanist's concede that large-scale operations will inevitably be auto-oriented, but they still claim their ideas can work for smaller-scale retailers."⁶²

A prevalent critique of New Urbanism resides in the movements desire to return to a traditional neighborhood model, which they believe provides a more sustainable urban form; New Urbanism's will to return to the traditional neighborhood, prior to large scale suburban development, is represented in this ideology of Traditional Neighborhood Design (TND).⁶³ The "traditional", an ambiguous term slop-

60) Fulton. "Challenges Conventional Planning"

61) Ibid.

62) Ibid.

63) Denise Hall, "Community in the New Urbanism: Design Vision and Symbolic Crusade." *TSDR* 9:2, (1998) 23-36. Emily Talen, "Sense of Community and Neighborhood Form: An Assessment of the Social Doctrine of New Urbanism," *Urban Studies* 36:8 (1999) 1361± 1379. Lund "Testing the Claims" 414-429

56) Cliff Ellis, "The New Urbanism: Critiques and Rebuttals," *Journal of Urban Design* 7:3 (2002) 273

57) Talen "Culture of Criticism," 341, Lund "Testing the Claims" 418

58) Fulton. "Challenges Conventional Planning"

59) Ellis "Critiques and Rebuttals," 261

pily used by New Urbanism, is a neighborhood that can be understood as being “complete;” having high accessibility and mobility, with modes other than an automobile for the average citizen like most traditional urban forms.⁶⁴ One critic of New Urbanism identifies the return to a ‘small-town life’ as “a false past purged of all its unpleasant elements and patterns of domination and exclusion;” a draconian allegation that threatens to undermine the movement’s claims.⁶⁵

The nostalgia among those who want to return to the ‘traditional neighborhood’ style of life could be thought of as having a strong sense of community and living in an accessible environment that is safe and pleasant.⁶⁶ This idea attracts a niche demographic seeking “community,” which could result in minimal demographic diversity. A study conducted in 2006 shows marginal demographic variations in New Urbanist neighborhoods when compared to conventional suburbs.⁶⁷ This study indicates the differences in “terms of age and household structure” in New Urbanist neighborhoods; demonstrated by “far fewer children” and a smaller average household size than a traditional suburban development...as well as “95 percent of the adults were white” as indicated in the 2000 census.⁶⁸

64) Davies, “Theme Cities” 61

65) Ellis “Critiques and Rebuttals,” 273

66) Ibid.

67) Dill, “Evaluating the Sustainability” 59-78

68) Ibid. U.S. Department of Commerce. Economics and Statistics Administration. U.S. Census Bureau “Demographic Trends in the 20th century” *Census 2000 Special Reports* (2000)

New Urbanism’s invocation, and rigorous marketing of community, has perhaps drawn a predisposed market into their developments.⁶⁹ New Urbanism also claims to “create” community through their TND, but community is an emergent organic process that cannot be simply designed into a development.⁷⁰ The marketing power of New Urbanism comes with their advertisement of community; Hall emphasizes that community is a term with “little actual practical or ideological direction...yet which is vague enough to embody everybody’s hopes.”⁷¹

The invocation of “community” furthers the nostalgia and ideology embedded in New Urbanist neighborhoods, which tends to attract only those who “seek community,” causing the demographic homogeneity discussed above.⁷² Critics believe that this invocation of community is “largely aesthetic and self-serving” and that NU designs are not conceived nor constructed through communal means; demonstrating how the term community is used “to imply social and economic plurality [and] is largely symbolic, disguising continued advocacy of conventional real estate development practices.”⁷³

69) Hall, “Design Vision and Symbolic Crusade” 23

70) Talen, “Assessment of the Social Doctrine” 1361± 1379

71) Ibid.

72) Talen “Culture of Criticism” 325

73) Hall “Design Vision and Symbolic Crusade.” Talen “Culture of Criticism” 327. Ellis “Critiques and Rebuttals,” 273; Audirac and A.H. Shermeyen, “An Evaluation of Neotraditional Design’s Social Prescription: Postmodern Placebo or Remedy for Suburban Malaise?” *Journal of Planning Education and Research*, Vol.13 (1994), pp.161-73

A major flaw in the New Urbanist neighborhood is their desire for a universal solution to very vast and complex contemporary problems. Some scholars have concluded that the presumption of environmental determinism is embedded within their neotraditional projects.⁷⁴ Evidence suggests this to be a false dichotomy between constructing behaviors induced by physical designs.⁷⁵ In terms of transportation, the New Urbanist movement makes claims of “reduced dependence on the automobile, increased transit use, shorter trips, and a more flexible hierarchy” that presume a physical determinism assumption.⁷⁶ New Urbanist design principles are merely an influential, not determining, factor in the travel behaviors of the individuals.⁷⁷ Travel behavior is out of the realm of control for New Urbanism, largely because it responds to a higher network of influence that resides in municipalities’ transportation initiatives that support or inhibit a sustainable mode choice. Transportation experts believe that “pursuing a reduction in auto subsidies, advocating for public policies that direct investment into alternative modes of transportation, and creating a synergy between lands could alter use and transportation planning travel be-

74) Audirac and A.H. Shermeyen, “An Evaluation of Neotraditional Design’s Social Prescription: Postmodern Placebo or Remedy for Suburban Malaise?” *Journal of Planning Education and Research*, Vol.13 (1994), pp.161-73.

75) Talen “Culture of Criticism” 326

76) Fulton “Challenges Conventional Planning,” 3

77) Dan Hickman, “International Handbook on Transport and Development,” *Edward Elgar Publishing*

(2015) 19. Daniel Chatman, “Residential choice, the built environment, and non-work travel: Evidence using new data and methods,” *Environment and Planning A*, 41:5 (2009) 1072-1089

haviors.⁷⁸ In planning practice, ideals such as congestion reduction often overtake the concept of accessibility, which is a core value of New Urbanism; transportation and land use planning that would focus on accessibility would, “maximize land use and transportation choices.”⁷⁹

The Congress for New Urbanism has been actively advocating for transportation and land use policy innovations but has gained minimal ground in the battle of progress standards that impede sustainable neighborhood development. These efforts are impeded by a “lack of political will and the inertia of existing policies, building practices and built form.”⁸⁰ The New Urbanism is at the will of municipal and federal standards that often impede the implementation of their principles; causing their developments to often not embody all of their goals which is one critical reason they have been met with such criticism. Emily Talen explains how “New Urbanism concentrates their principles in to a normative, prescriptive theory of urban development” and as a result have received a vast amount of criticism from academia and practitioners alike.⁸¹

New Urbanism is advocating to change the institutional roadblocks that limit the success of their sustainable neighborhoods as well as walking the line between true

78) Ellis “Critiques and Rebuttals,” 285

79) Talen “Culture of Criticism,” 330

80) Ellis “Critiques and Rebuttals,” 278

81) Talen “Culture of Criticism” 326

progressive designs and the ability to actually develop a neighborhood. An example of these restraints is illustrated in the street network characteristics, street designs, and intersection designs of the New Urbanist neighborhood in Denver, Colorado called Stapleton. In this study, Marshall analyzes the inconsistencies between New Urbanist ideals and the results of the built development in terms of design principles influencing travel behavior.⁸² The results suggest that New Urbanist design principles, when considered with conventional traffic engineering standards “results in travel behaviors more consistent with conventional auto-oriented developments.”⁸³ In other words, Marshall’s case study, and my research, demonstrates that some of New Urbanism’s developments have not provided a remedy for the larger issue of inadequate collaboration between parties involved in the development process.

The larger web of institutional frameworks, largely federal standards and initiatives to support unsustainable development, have critically limited the success of New Urbanist principles in practice. The same impediments can be identified in land use regulations. These same institutional frameworks have historically supported “the abandonment of the inner city” through public policies such as freeway

construction, urban renewal, public housing.⁸⁴ Policies that supported the proliferation of suburbia, which in turn caused the abandonment of the inner city, are the backbone argument behind the New Urbanist movement. A few scholars have identified how New Urbanism is working against “powerful forces of planning-and-zoning law to infuse suburban developments with community.”⁸⁵ Suburban development is the key word here: New Urbanism is revitalizing the suburb in a slightly more progressive form that still results in many of the problems of the conventional American suburb, such as the Stapleton neighborhood in Denver, Colorado.

These uncertainties make “proponents and critics alike fear that widespread application of the movement’s design principles apart from a regional context may simply cause suburban sprawl to be replaced by “New Urban” sprawl.”⁸⁶ This fear of New Urban Sprawl is derived from the criticism that New Urbanist neighborhoods merely look urban, and that they function very similarly to suburbia.⁸⁷ I will further discuss this discrepancy in a later section. The similarities between traditional suburbia and New Urbanism lie in their reliance on the automobile, segregated land use zones and their ideological and cultural affinities. In fact,

84) Ellis “Critiques and Rebuttals,” 267

85) Hall, “Design Vision and Symbolic Crusade” 25. Ellis “Critiques and Rebuttals,” 267. Fulton. *Challenges Conventional Planning*

86) Fulton. “Challenges Conventional Planning” 5

87) Ibid.

82) Marshall, “The case of Stapleton,” 153

83) Ibid.

“many New Urbanist’s concede that large-scale operations will inevitably be auto-oriented, but they still claim their ideas can work for smaller-scale retailers.”⁸⁸

In terms of the physical environment crafted by New Urbanist ideals, their goals are certainly commendable but apply to too broad of a spectrum to truly make a difference in environmental and social sustainability. In 2007, the Congress for New Urbanism, in collaboration with USGBC and NRDC, created LEED-ND, Leadership in Energy and Environmental Design for Neighborhood Development, which is an evaluation system to rate developments on a scale based off of metrics and ideals derived from these organizations.⁸⁹ This scale of evaluation is very broad and would support anything from a mainstream suburb to a highly dense urban environment, which in part relates back to their issue of ideals versus feasibility. The physical design of New Urbanist neighborhoods rely on Traditional Neighborhood Design (TND) principles, which advocate for “higher” densities and “more accessible” environments than the conventional suburb. I put quotes around “higher” and “more accessible” because often times there is no significant difference in performance between a conventional suburb and a New Urbanist neighborhood.⁹⁰ The physical design of the transportation

88) Ibid.

89) LEED for Neighborhood Development. Congress for New Urbanism. www.cnu.org/our-projects/leed-neighborhood-development

90) Lund “Testing the Claims” 418

environment is a critical point in evaluating New Urbanism. A case study on the Stapleton neighborhood in Denver, Colorado shows that failures and inconsistencies with New Urbanist principles, which will be discussed in more depth in a later section.

The evaluation of environmental sustainability through LEED-ND is often met with criticism in regards to the way it measures some of its metrics. The way that LEED-ND measures some of their standards has proven to be flawed and has the potential to be “gamed” for additional points, which results in being awarded for poor connectivity; this is important because it creates an illusion of sustainability through a flawed evaluation system.⁹¹

Owen critiques “LEED certification, “smart growth” zoning, and typical ‘green’ urban planning” for in practice making “development less sustainable” by ignoring the factors that make urban environments so sustainable, such as: “high population density, mixed-use development, wide sidewalks, narrow streets; the very factors which make cities livable, and make walking, bicycling, and transit more practical options than driving.”⁹² Owen’s argument is the fact that incentivizing any “green initiatives” in a non-urban context will ultimately be unsuccessful in combating contem-

91) Paul Stangl, “Neighborhood Design, Connectivity assessment and obstruction,” *Urban Design International* 16:4 (2011) 290

92) Owen, “Green metropolis”

porary sustainability issues.⁹³ The majority of New Urbanist neighborhoods do not implement nearly enough density to support a demand for alternative transit options, nor the density to support a successful commercial or retail district as well as often implementing the infrastructure to support an auto-centric environment.⁹⁴

It is clear that the critiques of New Urbanism reside in practice rather than principle, any institution can make broad claims and assertions but the only testable element of their principles is in practice and implementation. This is often where New Urbanism is met with the most criticism for building on the urban fringe without regional context and without the necessary densities or transportation infrastructures to support environmental and social sustainability. Owen articulates, two largest roadblocks to environmental sustainability “are mutually reinforcing factors: cars and sprawl;” “The automobile has allowed us to sprawl which makes driving a necessity and also makes high quality public transit unfeasible, cars are also “major offenders in terms of energy consumption and carbon output.”⁹⁵ In conclusion, some believe that New Urbanist neighborhoods are “faux-towns, cozy and nostalgic developments which feign urbanity” that are not actually urban by any sense of the word,

93) Ibid.

94) Ellis “Critiques and Rebuttals,” 290

95) Owen, “Green metropolis”

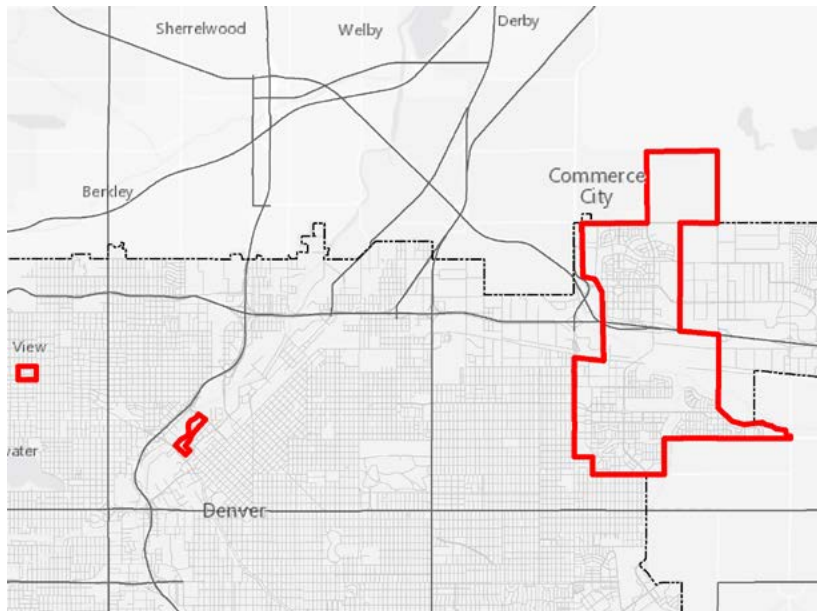
whose ideologies are often left without support of empirical evidence.⁹⁶

Given these compelling critiques of New Urbanism, especially considering their admirable goals and ideals; I asked myself, to what extent are they succeeding, and what forces are inhibiting them from achieving their goals, and thus creating inconsistencies between principles and practice? I selected three prominent New Urbanist developments varying significantly in location and design to analyze; in order to get to the bottom of this controversy. I chose these neighborhoods because when I began exploring New Urbanism in Colorado, I came across a statement on the Congress for New Urbanisms website that claims that, “largely thanks to New Urbanist infill projects like Stapleton, Riverfront Park and Highlands Garden Village... the city has come back and even surged in population.”⁹⁷ Given this statement, I felt these three neighborhoods would be most appropriate to study for my precedent analysis, where I begin to ground the truth of these claims into three prominent New Urbanist neighborhoods in Denver, Colorado.

96) Dewolf, Chris (2002) Why New Urbanism Fails, Planetizen.com. Fulton. *Challenges Conventional Planning*, 7

97) About Denver. Accessed November 2015, CNU.org/aboutdenver.com

These three neighborhoods, seen on the map to the right, represent the broad spectrum at which New Urbanism practices. I will be evaluating these neighborhoods based upon the eight categories discussed previously. Given the subjective nature of these categories, as well as the available data and information, I used case studies, development proposals, walkability and bike audits, GIS, interviews and surveys, as well as best practice metrics in order to strengthen my analysis of these neighborhoods. I use these methods to evaluate each neighborhood based upon these 8 categories. I use these categories to identify any discrepancies among these neighborhoods on whether or not they achieve the goals set forth by New Urbanism.



1) locations of each neighborhood, from left to right: Highland Garden Village, Riverfront Park, Stapleton

In order to accurately portray and analyze these three New Urbanist Developments in Denver, Colorado I used a variety of both quantitative and qualitative methods. The critiques of New Urbanism as well as its descriptive information as a movement were derived from peer-reviewed journal articles as well as information sourced directly from the Congress for New Urbanism's archives and web-page.

The data and design characteristics of each development were gathered from a variety of sources including construction documents, development proposals, case studies, Geographic Information System, Open Street Map, and visual observation and analysis. Determining whether the developments met the principles set forth by the Congress of New Urbanism combined both case study information, site visits, and survey interviews.

The GIS data for the City of Denver was incomplete and somewhat outdated; I compensated this lack of information by using another mapping source, Open Street Maps, which is a open source mapping database. Open Street Maps hires professionals to ensure the accurately of each map as well as to check each addition made in open source scenarios, therefore I took this source as accurate for the purposes of this study. I also visually confirmed several elements of the

Open Street Maps data via site visits to each development.

The survey interviews provide a qualitative analysis of the success of these developments in practicing the principles of New Urbanism. In total I collected fifteen surveys from each development, totaling forty-five surveys that I used to evaluate factors of livability. The residents must live in the neighborhood in order to take the survey. While the sample size of these surveys are minimal, I believe it is a large enough sample to make some general observations. See appendix 2 for the survey questions.

Overall , the variety of methods used to define, describe, and analyze these three developments compensate for the lack of available data as well as any bias that occurred in case studies or visual observation. This research was approved by the International Review Board for the protection of human subjects, protocol 16-0088.

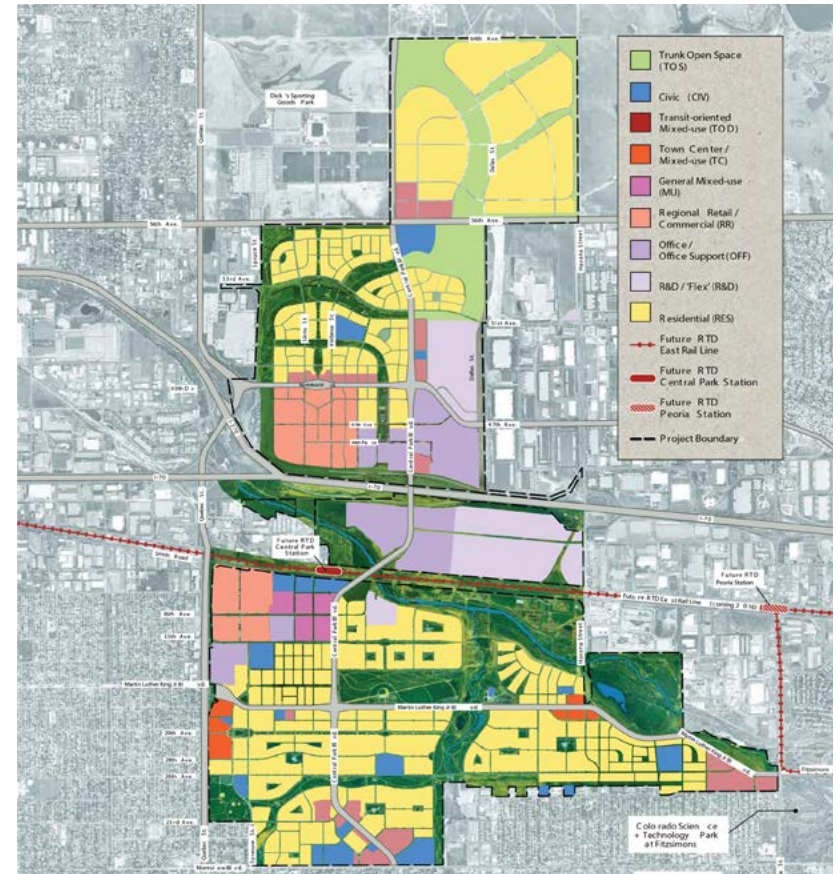
NEW URBANISM IN DENVER, COLORADO

THE STAPLETON NEIGHBORHOOD

Beginning in 1989, the *Stapleton Tomorrow* plan began to reevaluate the use of the vacant Stapleton International Airport in northeast Denver. Stapleton is the largest greyfield infill redevelopment in the United States residing on a 4,700-acre site plot of land with more than 12,000 residential units.⁹⁸ Master-planned by Calthorpe Associates, a notable New Urbanist architecture and planning firm, the Stapleton neighborhood uses TND as a means of creating an environmentally and socially sustainable neighborhood divided into seven districts, each with varying densities and uses as well as their own neighborhood centers. Stapleton contains mostly detached single-family homes of varying size and price points; the development also contains an 80-Acre park, 2 greenways and a 123-acre wildlife refuge, 9 schools, and several mixed use commercial and retail centers.⁹⁹ This development is located approximately 15-20 minutes by car from downtown Denver on the northeastern fringe of the city.

⁹⁸Community Planning and Development "Stapleton Site Development Proposal" (1999) City of Denver

⁹⁹ Ibid.



2: Stapleton Master Plan



3: Aerial view of Stapleton's vast greenways; note the Denver skyline in the distant background

HIGHLAND GARDEN VILLAGE

Highland Garden Village (HGV) is a mixed-use development completed in 2007 in the Highland neighborhood of Denver, Colorado. HGV is a greyfield infill redevelopment that utilizes the remnants of the former Elitch Gardens Amusement Park. This 27-acre site contains 52 single-family units, 20 carriage homes, 64 town homes, 63 senior apartments, 74 multifamily units, and 33 cohousing units; the site also contains “14,000 square feet (1,300 square meters) of office space, and 82,400 square feet (7,665 square meters) of neighborhood retail uses.”¹⁰⁰ Master planned by Calthorpe Associates, HGV has numerous civic uses including the renovation of Elitch Garden’s Carousel, Historic Elitch Theatre as well as the Denver Academy of Arts and Technology. The design for this redevelopment utilized many of Elitch Gardens historical features such as existing layout and structures to “create a public realm with an authentic sense of place.”¹⁰¹

100) Denver Urban Renewal Authority, “Analyzing the Impacts of Urban Renewal: Highland Garden Village Case Study,” (2005)

101) Ibid.



4: Masterplan of Highland Garden Village by Calthorpe Associates



5: The HGV community garden with town-homes, single-family homes, and cohousing in the background



6: Aerial view of historic Elitch Gardens Amusement Park

RIVERFRONT PARK

Riverfront Park is an urban infill project located in between Denver's Union Station and the South Platte River. This development is located at the edge of downtown Denver, offering a variety of services and amenities as well high connectivity to the rest of the city. Riverfront Park has an existing 1,859 residential units on a 23-acre site, correlating to a gross density of over 80 dwelling units per acre; this project also contains 49,000 ft² of commercial and retail space, three public parks, and a museum.¹⁰² The development consists of 14 buildings that mesh into the existing Denver skyline; these buildings contain a wide variety of housing types and price points that enhance the socioeconomic diversity of the neighborhood. Riverfront Park also built a skate park, dog park, confluence park plaza, and a museum of contemporary art throughout its development. This project was master-planned by Design Workshop, a Denver-based architecture and planning firm, whose design fully embraces the surrounding environment to create a dense and vibrant neighborhood within the core of downtown Denver.¹⁰³

102) Urban Land Institute, "Riverfront Park Case Study" (2014)

103) Ibid.



7 : Master plan of Riverfront Park by Design Workshop



8 : Aerial view of Commons Park dividing the South Platte River and Riverfront Park; mid-construction phase



9 : Community event at the Millennium Bridge Plaza

PRINCIPLES AND PRACTICE:

Stapleton, Highland Garden Village, and Riverfront Park are all meant to embody New Urbanist principles in their implementation; although for reasons I will discuss at a later time, some or many of these principles were not achieved in these developments. This next section will describe each New Urbanist principle and its implementation at each of these three neighborhoods, ending with a brief discussion on their similarities or contrasts to one another and to the movement as a whole.

WALKABILITY:

STAPLETON

The Stapleton neighborhood has been criticized by Marshall for being auto-centric in terms of street network design and hierarchy, having auto centric travel behavior of the residents, and lacking pedestrian infrastructure. Stapleton has wider- than-average streets throughout most of the development, ranging from 11'-15'.¹⁰⁴ An average residential street lane width is 12' as suggested by federal emergency vehicle standards as well as traditional engineering best practices.¹⁰⁵ Wide vehicle lanes strongly correlate with higher speeds and less attentive drivers, reducing the safety of

the neighborhood for pedestrians and thus decreasing the walkability of the neighborhood.¹⁰⁶ Stapleton has low connectivity, as measured by intersection density, with 176 intersections per square mile; a "connected" standard is 200 intersections per square mile.¹⁰⁷

The majority of sidewalks at Stapleton are 5' wide, barely wide enough for two people to walk side by side, which reduces walkability. The National Association of City Y Transportation Officials (NACTO) advocates for a minimum of 6' sidewalks in any residential development.¹⁰⁸ In order to get the full experience I took the bus from Union Station to Stapleton. When I departed from the hour-long bus ride I was dropped off adjacent to a 168' Right-of-Way (ROW) dominated by high-speed vehicles. I walked from the northwest corner, starting at the Walmart Supercenter, and walked to the southeast corner, ending at Spencer Garrett Park at the boundary of the Stapleton neighborhood. It took me over an hour walking at a leisurely pace to reach my destination. I took the quickest route based on Google Maps directions, half of my walk was along Central Park Blvd which is the 4-lane arterial blvd running through the heart of Stapleton. On a beautiful Saturday, I saw a total of 25 other pedestrians

104) Marshall, "The case of Stapleton," 148

105) Institute of Transportation Engineers, "Guidelines for Residential Subdivision Street Design." *Institute of Transportation Engineers Journal*, (1984 & 1990)

106) Marshall, "The case of Stapleton," 148. Eva Leslie, "Walkability of local communities: Using geographic information systems to objectively assess relevant environmental attributes," *Health & Place* 13 (2007)

111-122

107) Ibid.

108) NACTO Urban Street Design Guidelines (2015)

walking throughout the neighborhood. The monotony of the repetitive architecture and streetscaping as well as the lack of pedestrian infrastructure provided me with a less-than-pleasant walking experience.

My surveying of Stapleton residents supported these claims. The results of my surveys showed that 73.33% of participants feel safe/comfortable crossing the street; a follow up question asking about high vehicle speeds or inattentive drivers begins to shed light on this statistic; 46.67% reported high vehicle speeds and 26.66% reported inattentive drivers. These could begin to indicate why almost 1/4 of participants did not necessarily feel safe or comfortable crossing the street.

Marshall's study specifically analyzed Stapleton's transportation infrastructure; this study concluded that in "Stapleton's current incarnation, are: (1) higher than- desired vehicle speeds on streets of every type; and (2) higher driving mode shares and less walking, biking, and transit use than peer neighborhoods in the region."¹⁰⁹ This is largely credited to a standard street design as well as vacant on-street parking which ultimately creates more space for cars to drive in an correlates with higher speeds. 86.66% of participants enjoyed walking through their neighborhoods, primarily for aspects of aesthetics and most spoke to the ample

¹⁰⁹ Marshall, "The case of Stapleton," 154

greenspace as a primary factor. See appendix 1 for street sections and See appendix 2 for walkability questions.



10 : Stapleton neighborhood showing a pedestrian path in between two collector roads



11 : Stapleton neighborhood showing a 5' sidewalk, note the odd bench facing towards the street

HIGHLAND GARDEN VILLAGE

Highland Garden Village (HGV) has below average street widths of ranging from 8'-11' per lane.¹¹⁰ The pedestrian infrastructure is of moderate quality at HGV, sidewalks are on average 6' in width and crosswalks are sometimes unmarked; the streetscape is designed at a human scale (1:3 building height to street width ratio), with posted vehicle speeds of 20mph; due to the short street segments, vehicles tend to drive at safer speeds.¹¹¹ The streetscape at HGV is also lined with mature trees along the majority of segments, which creates a more enjoyable environment for the pedestrian. HGV has strong features of a walkable neighborhood but also lacks on several critical criteria such as high quality pedestrian infrastructure and street widths that support traditional vehicular travel behavior.

During my walkability audit at HGV I encountered over 50 pedestrians walking throughout the neighborhood and using the public spaces. It took me a little under 10-minutes to walk from the northwest corner, sprouts farmers market, to the southeast corner. The diversity of architecture and streetscaping, as well as shorter street segments with lower vehicle speeds made my walk at HGV enjoyable. The survey results demonstrated that 80% of participants feel

safe/comfortable crossing the street; 20% reported high vehicle speeds and 26.66% reported inattentive drivers. These results seem to correlate with HGV's positive street elements such as below average lane sizes. 93.34% enjoyed walking through their neighborhoods, this speaks to aspects of safety and also aesthetics.



12 : Historic Elitch Gardens Theatre lined by a 10' path lined with adolescent trees



13 : Highland Garden Village showing a 5' sidewalk with streetscaping and on-street parking

110) DURA "Impacts of Urban Renewal: Highland Garden Village"

111) Ibid.

RIVERFRONT PARK

Riverfront Park has developed a very walkable environment. Located in a dense urban center where space is heavily limited. Riverfront Park has managed to create safe and high quality pedestrian infrastructure that allows pedestrians to feel comfortable engaging with the streetscape.¹¹² Located next to several main travel corridors, Riverfront Park was unable to influence existing roadway infrastructure, although new internal roads that were developed implemented low street widths with an average travel lane of 11'.¹¹³ The streetscape at Riverfront Park has high-quality pedestrian infrastructure including vibrantly marked street crossings, on street parking, ample vegetation that creates a pleasant experience for the pedestrian. Marked vehicle speeds on internal streets are 20mph; with short street segments and on-street parking, vehicle speeds tend to be relatively in-line with the posted speeds.

My walkability audit at Riverfront Park was a very pleasant experience; I began at the northeast corner of Commons Park and ended at The Station apartments at the southwest corner of Riverfront Park. This walk took me a little over 10 minutes at a leisurely pace, I walked along Little Raven St on the multi-use path bordering Commons Park which

112) ULI "Riverfront Park Case Study"

113) Ibid.

was active with families, athletes, adolescents, elderly and transients. Little Raven St had numerous marked pedestrian crossings connecting Commons Park to Riverfront Park, vehicles seemed attentive and were driving at lower-speeds, probably because of how active the space was. I tried counting how many pedestrians I saw but quickly lost count. Riverfront Park provides an active, safe and enjoyable walking environment with high connectivity.

Survey results show that 86.67% of participants feel safe/comfortable crossing the street; 20% reported high vehicle speeds and 33.34% reported inattentive drivers. These results probably relate to the safe and pleasant streetscape at Riverfront park with large sidewalks, ample vegetation, lower vehicle speeds, and high accessibility. 93.34% enjoyed walking through their neighborhoods, primarily for reasons of active street life and aesthetics.



14: A pedestrian walking along Little Raven St path lined with trees and streetscaping



15 : A cloudy day in downtown Denver, none the less the streets were filled with walkers

JUXTAPOSITION

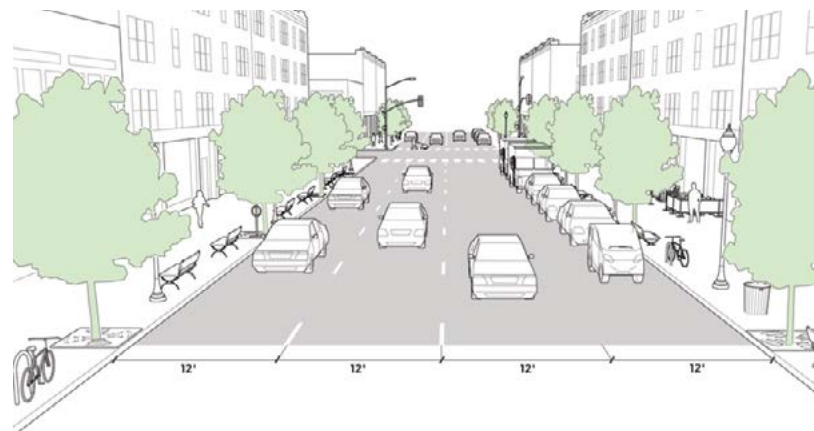
Based off of survey results, case studies, and walkability audits; Stapleton has the lowest walkability of the three neighborhoods, Highland Garden Village is very walkable; and Riverfront Park has strong walkability but lacks a “human-scale” environment due to its taller buildings.¹¹⁴ A common element amongst these precedents is the variation in street size and its correlation with walkability; the National Association of City Transportation Officials (NACTO) advocates for 10’ travel lanes, 10’ lanes are “appropriate in urban areas and help to promote slower driving speeds, which, in turn, reduce the severity of crashes. Narrower streets have other benefits as well, including reduced crossing distances, shorter signal cycles, less storm water, and less construction material to build.”¹¹⁵

¹¹⁴) The USGBC Identifies a 1:3 ratio of building height to street width as the ideal “human-scale environment”

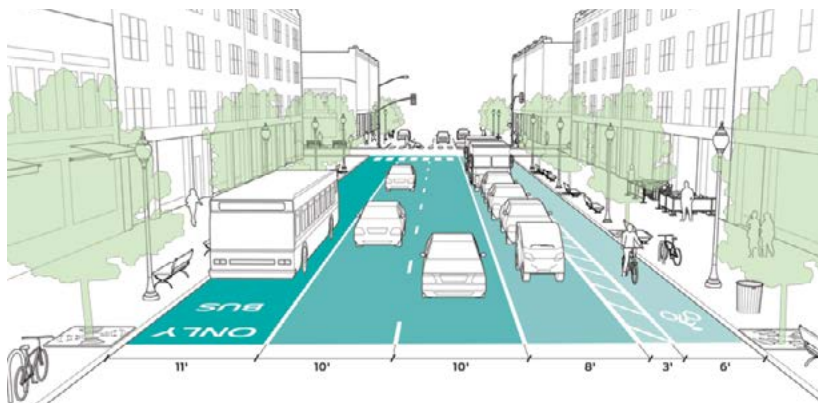
¹¹⁵) NACTO Urban Street Design Guidelines (2015)

Sidewalks provide a crucial element of walkability that cannot be ignored when developing residential neighborhoods; the NACTO urban design guideline for sidewalks recommends an absolute minimum of 6’ sidewalks in less dense urban areas and a minimum of 8’ in downtown areas.¹¹⁶ The buffer zone, in between the sidewalk and street, should contain a variety of elements including: parking, bike racks, bike lanes, street trees, curb extensions, and storm water management features. The diagrams below illustrate conventional and best practices for creating walkable environments in urban areas. While Stapleton, Highland Garden Village, and Riverfront Park all provided some of these elements, it is the extent to which they went above and beyond these practices to create an enjoyable pedestrian environment that created this juxtaposition between these developments.

¹¹⁶) Ibid.



16 : NATCO Urban Street Design Guidelines, common road dimensions in an urban environment



17 : NATCO Urban Street Design Guidelines, ideal road dimensions in an urban environment

SUSTAINABILITY:

STAPLETON

During the development process of the Stapleton neighborhood there was a strong initiative to recycle existing structures and materials. Although recycled content is small component of sustainability it is one criteria that can be directly measurable by the impact of development. The Stapleton neighborhood meets “Energy Star requirements with energy and water savings ranging from 40-70% over conventional design and construction; It is also the nations largest recycling project, recycling over 6 million tons of concrete through development”¹¹⁷

Stapleton also set aside a vast amount of green space and wildlife refuges, covering roughly 30% of the site, which help with the heat island effect as well as with green infrastructure and storm water management.¹¹⁸ The Stapleton

117) Urban Land Institute “Stapleton Case Study” *Urban Land Institute* (2006)

118) Ibid.

neighborhood does not produce energy within the development, which is identified as a clear goal in NU principles. “More walking, less driving” is also identified as a crucial component of sustainability in NU principles; this will be discussed in more depth in the smart transportation section which follows. Stapleton experiences higher driving mode shares than “peer neighborhoods in the region” due to its auto centric street hierarchy and sprawl from various services and amenities, which has impacts on auto-usage and therefore environmental impacts.¹¹⁹

HIGHLAND GARDEN VILLAGE

HGV invested heavily into revitalization existing structures as well as recycling materials during the construction process; “30 tons (27.2 metric tons) of concrete from the old site was crushed and reused as road base; the project uses alternative energy sources such as wind-generated electricity for parks, civic buildings, and apartment buildings; and various recycled products such as wood, insulation, and siding were used in the construction of the homes and townhouses.”¹²⁰ HGV also has moderate accessibility which allows its residents to use modes other than a car to reach a variety of service and amenities which in turn has environmental impacts. HGV demonstrates a high percentage of walking and biking as

119) Marshall, “The case of Stapleton,” 154

120) Urban Land Institute “Highland Garden Village Case Study,” *Urban Land Institute* (2008)

well, which will be discussed in more detail in the smart transportation section.

RIVERFRONT PARK

Based off of case studies and site development proposals, Riverfront park implemented no recycling or alternative energy initiatives through the development phase. However, Riverfront Park achieved a “20% water reduction (compared to conventional development practices), community recycling program, bike storage and proximity to public transit, indoor air quality improvements, xeriscaping landscape technique, and low emitting and regionally sources materials” as part of their sustainability initiatives.¹²¹

The urban form and location of Riverfront Park also provide aspects of sustainability; the high density, 80 Du/ Ac, helps to reduce per capita emissions by having compact building forms that are energy efficient, and allows more residents to be closer to a variety of services and amenities. Riverfront Parks urban infill location at the recently revitalized core of downtown Denver connects residents to an existing high quality transit, cycling, and pedestrian network that encourages alternative modes of transportation, such as Union Station and the extensive green-way multi-use path network. As I have mentioned previously, high accessibility and mobility is crucial in sustaining environmental and so-

¹²¹) ULI “Riverfront Park Case Study”

cial sustainability.¹²²

JUXTAPOSITION

Each of these neighborhoods varies in how they achieved “sustainability” as described by the New Urbanist charter principles and canons. Stapleton pro-actively used existing materials and infrastructure to their advantage when redeveloping Stapleton International Airport, recycling over 6 million tons of concrete through out the process. Although, Stapleton’s low densities and auto centric street hierarchy discourages alternative transportation use as well as creating low mobility and accessibility if you do not regularly drive a car.

Highland Garden Village (HGV) achieved high sustainability through alternative energy production, building energy efficiencies, as well as material and building recycling and reuse during development. HGV is also a moderately accessible environment which correlates to transportation mode choice. Riverfront Park achieved many aspects of sustainability outlined by NU Principles including minimal environmental impact during development, energy efficiency in building performance, as well as promoting more walking and less driving via being connected to high quality alternative transportation infrastructure.¹²³

¹²²) Ibid.

¹²³) ULI “Riverfront Park Case Study”

COMPLETE STREETS AND “SMART”
TRANSPORTATION:
STAPLETON

The Stapleton neighborhood does not represent the characteristics outlines for “smart” transportation in NU principles; Stapleton’s internal street network is auto centric and does not encourage alternative transportation modes. There is not data available for percentage of surface parking at Stapleton, although from personal observation I would say it is larger than 20%. One study reported that “Stapleton’s current incarnation, are: (1) higher than- desired vehicle speeds on streets of every type; and (2) higher driving mode shares and less walking, biking, and transit use than peer neighborhoods in the region.”¹²⁴ The 2010 Front Range Travel Survey concluded that 92% of Stapleton residents drive to work, compared to 65.7% at East Colfax and 72.2% at Cherry Creek.¹²⁵

Stapleton, although they have ample bike routes established, was neither safe nor enjoyable to cycle in. The cycle lanes do not represent best practices: some of the cycle lanes, especially down Central Park Blvd, are 3’-4’ in width and are marked in-between on-street parking and a high-speed arterial which creates a very unsafe environment for cyclists. Connection to Denver’s RTD system is also poor,

124) Marshall, “The case of Stapleton,”¹⁵⁴
125) Ibid.

their is only one route running through the heart of Stapleton, the 105; the Central Park Park-N-Ride is scheduled for operations in 2016, although it is located in the most north-western corner of Stapleton, leaving much of the development without easy access.¹²⁶

Survey results show that 2/3 of participants bike frequently or sometimes, although 80% of these prefer to bike through the greenspace or on separate paths rather than in on-street bike lanes primarily for reasons of comfort and enjoyment. Overall, I do not believe Stapleton’s streets are anywhere near “complete,” in fact, in my opinion, the infrastructure creates a less safe environment for different modes than not having any at all.

The next two pages are street sections of the smallest and largest streets at each neighborhood. These illustrations, accompanied by a short description, help demonstrate the qualities I discuss in the complete streets and smart transportation section.

126) ULI “Stapleton Case Study”

HIGHLAND GARDEN VILLAGE

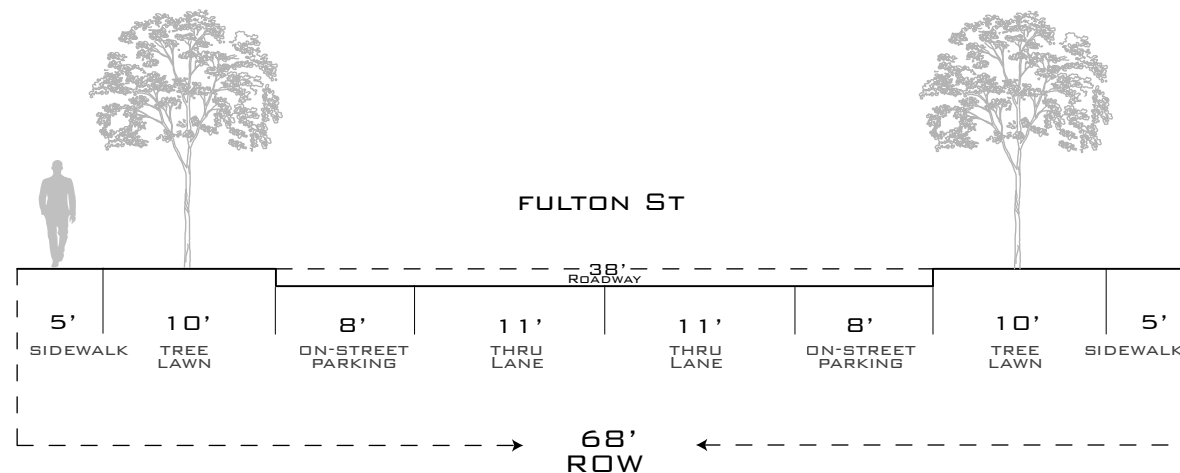
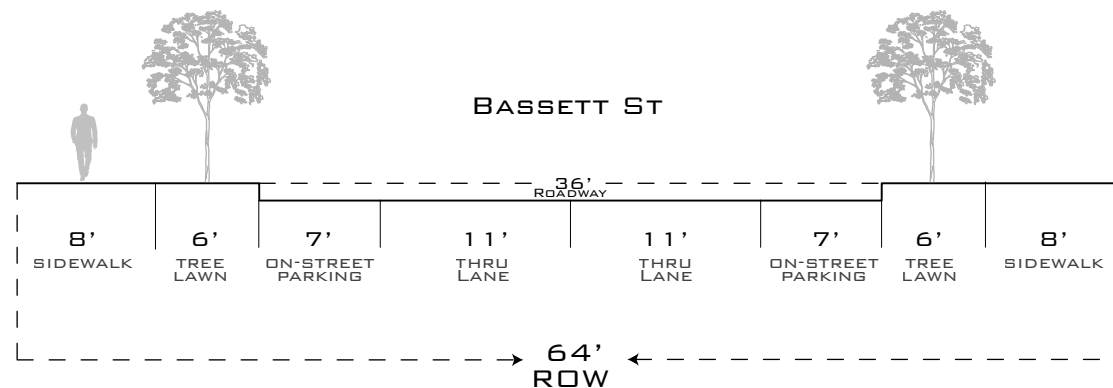
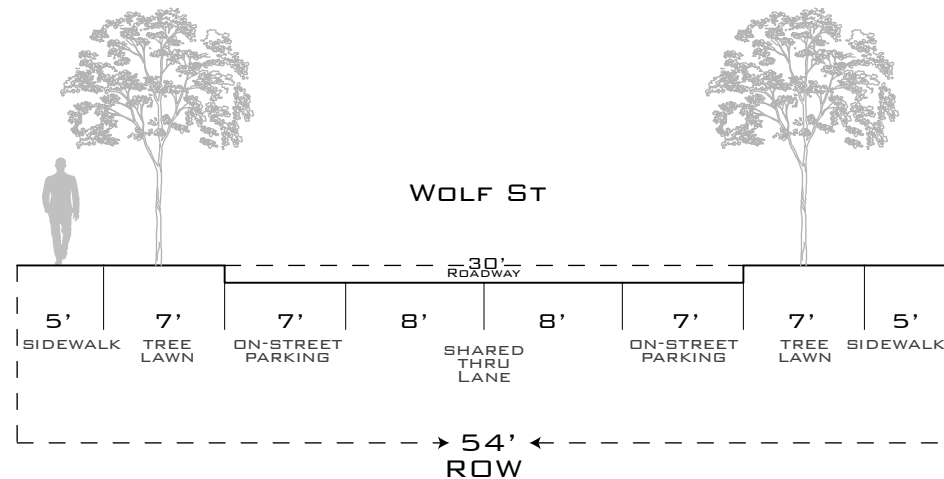
Wolf St is the smallest street in Highland Garden Village with a 54' ROW. The historic "shared thru-lanes" provide less space for cars and thus encourage slower vehicle speeds and produce more safe environments for pedestrians. Although the total 30' is smaller than average, I believe more room could have been taken from the tree lawns to provide for wider sidewalks.

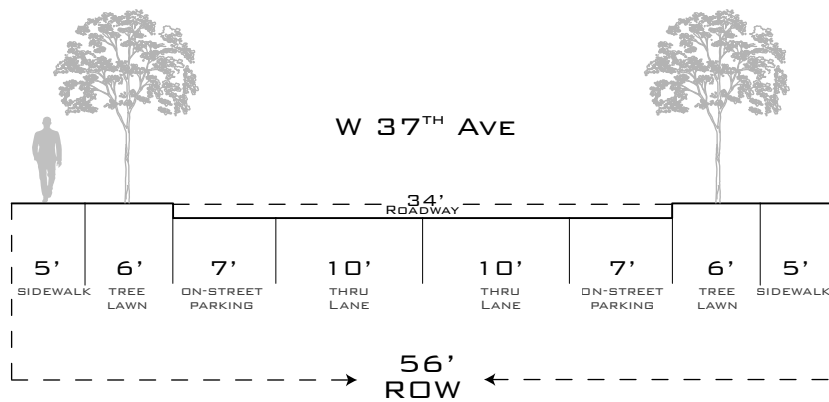
RIVERFRONT PARK

Bassett Street is the smallest street in Riverfront Park with a 64' ROW. While the 11' thru lines are mild improvements from set standards, the ample 8' sidewalks and spacious buffer, as well as on-street parking, help to create a more safe pedestrian environment. The on-street parking along Bassett St is in high-demand, providing a safe barrier for pedestrians and ultimately encouraging lower vehicle speeds.

STAPLETON

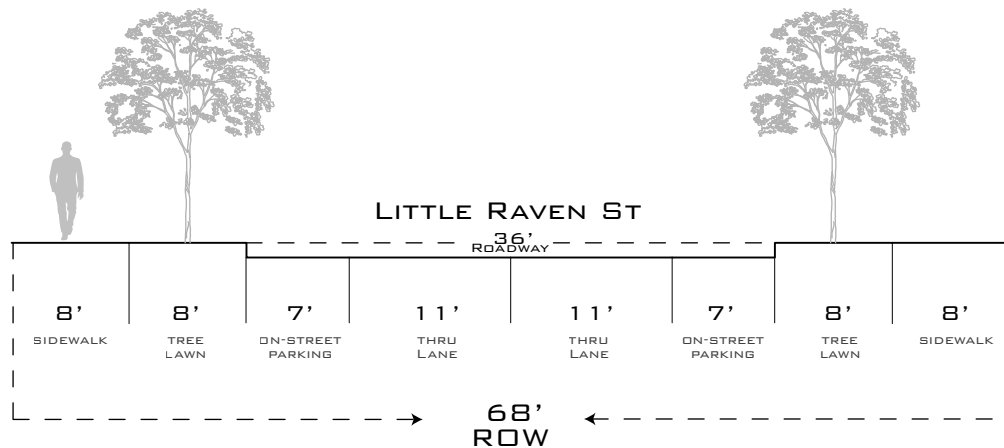
Fulton Street is the smallest street in Stapleton with a 68' ROW. These local residential roads are appropriate for their environment, although as noted in a study discussed previously, the on-street parking is largely vacant and thus provides more space for cars and can encourage higher speeds.





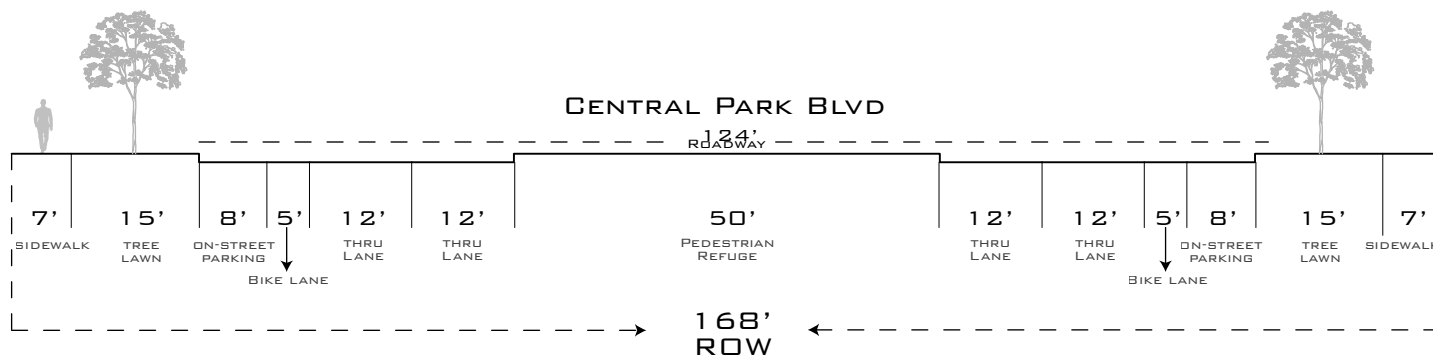
HIGHLAND GARDEN VILLAGE

W. 37th Ave is the largest street in Highland Garden Village with a 56' ROW. The 10' thru lanes are a substantial improvement from conventional road standards, encouraging slow vehicle speeds. Although the sidewalks are minimal, this still provides a safe environment for pedestrians.



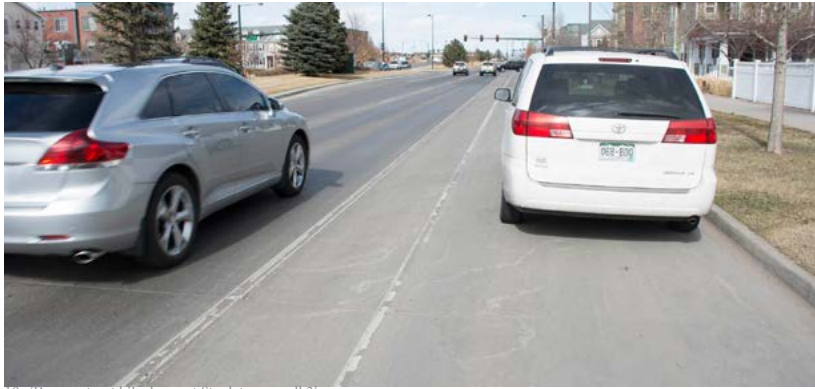
RIVERFRONT PARK

Little Raven Street is the largest street at Riverfront Park with a 68' ROW, only moderately larger than Bassett St due to a larger tree lawn. These ample 8' sidewalks allow two pedestrians to walk side-by-side and create a more comfortable environment, especially given the ample tree lawn and the barrier of cars parked on-street.

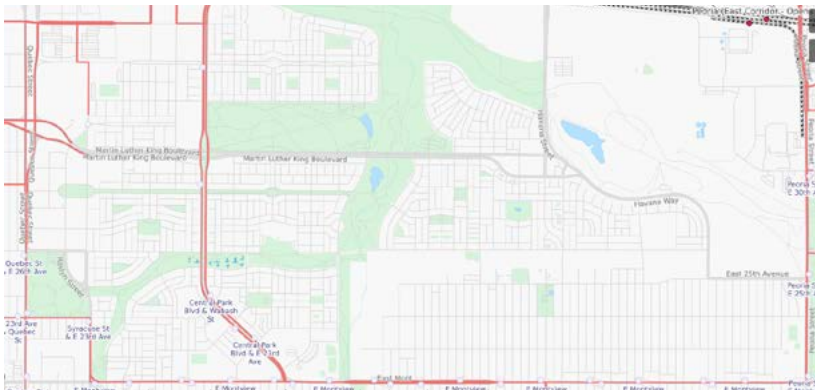


STAPLETON

Central Park Blvd is the largest street in Stapleton, a 124' arterial road cutting through the middle of the development. This large road was developed to accommodate future growth, but in its current manifestation it is causing excessively high vehicle speeds as the Marshall study found; Note the unsafe construction of a 5' bike lane bordered by high speed vehicles and on-street parking with the potential to get "clipped" by an opening door.



18 : The on-street bike lanes at Stapleton are all 3'



17 : A bus route map showing a large area of inaccessibility throughout Stapleton

HIGHLAND GARDEN VILLAGE

Highland Garden Village (HGV) does not represent all the characteristics of a “smart” transportation system; HGV has below standard travel lanes, a 30’ ROW, small 5’ sidewalks, minimal pedestrian safety infrastructure and no marked bicycle infrastructure; HGV also has 27.2% Surface parking, which is higher than the goals set forth by NU charter principles and canons.¹²⁷ Although HGV does not have any marked cycling infrastructure , I saw over 15 cyclists during

127) ULI “Highland Garden Village Case Study”

my site visit ; after a short interview with a couple of the cyclists they all said they felt comfortable cycling throughout HGV , and that vehicles were attentive and drove slowly.

During my bike-audit at HGV I felt comfortable cycling on the road without marked infrastructure, although the addition of cycling infrastructure would help the “interested but concerned” demographic to feel more comfortable cycling throughout HGV. Although there is a lack of internal cycling infrastructure, HGV does have a direct connection to the cycling network connecting to the rest of Denver.

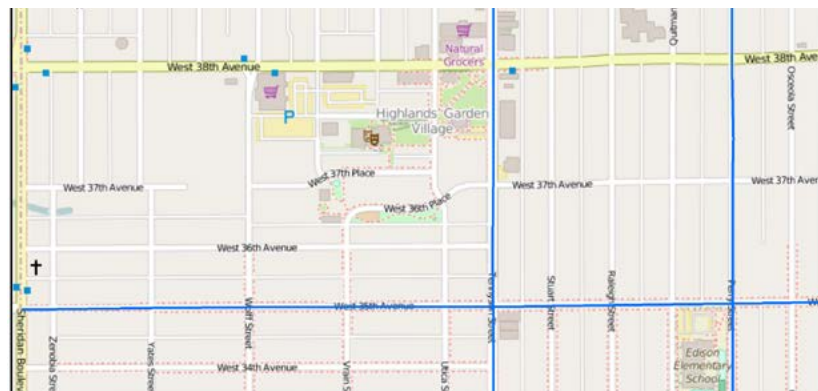
HGV has direct access to three RTD bus routes, the 32, 38, and 51, all of which directly connect to downtown Denver’s Union Station. These routes take approximately 30-minutes with 15-minute headway. The bus stop locations are all within a quarter-mile of HGV, which is considered a walkable distance. This moderate level of service is a result of the lower residential densities in the Highland neighborhood, which demands less services than a higher density area of Denver. A higher frequency service could encourage residents of HGV to use alternative transportation more often.

Survey results show that 60% of participants bike frequently or sometimes; with 2/3 of these preferring to

bike on greenspace or on separate paths rather than in on-street bike lanes outside of HGV. I believe in order to achieve the smaller than average ROW at HGV, bike lanes were not necessarily feasible. This limitation does deteriorate the complete streets aspects of HGV.



19 : A bus route map showing direct access to two bus routes destined for Union Station in downtown Denver.



20 : Highland Garden Village has no internal bike paths but does have connection to the Denver bike facilities, shown in blue

RIVERFRONT PARK

Riverfront Park does have a “smart” transportation network; integrating narrow streets, high quality bike lanes and pedestrian infrastructure that promote alternative transportation modes.¹²⁸ Riverfront Park, being located in downtown Denver and less than a quarter mile away from Union Station, has extremely high mobility and accessibility for its residents which correlate to per capita lower VMT’s as well as lower emissions and consumption.¹²⁹ Residents at Riverfront Park also have access to the Denver B-Cycle bike sharing system as well as ample public bike storage throughout Little Raven St .

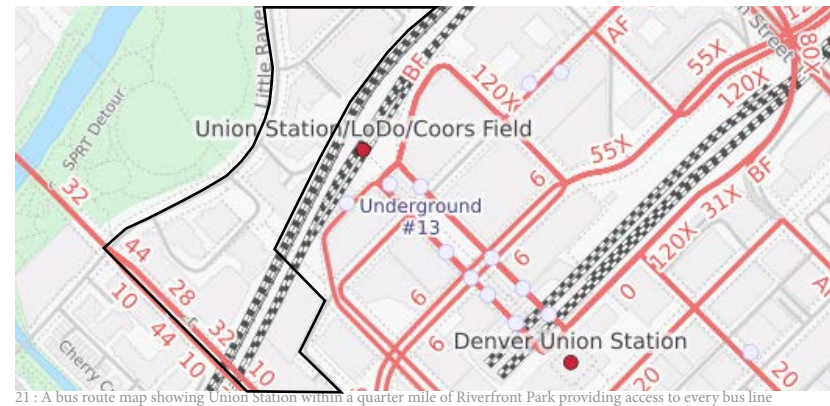
The bike audit I conducted at Riverfront yielded promising results for a “smart” transportation system with complete streets. I cycled along the Commons Park Multi-use path as well as on urban streets throughout Riverfront Park. While there is no marked cycling infrastructure on shorter street segments such as Basset St; I , and others, felt comfortable cycling through this environment. Vehicles were traveling slowly and seemed very attentive to their environment, most likely due to the high levels of activity occurring at Riverfront Park. The multi-use path at the Commons Park connects to a spectrum of other green-ways going through-

128) ULI “Riverfront Park Case Study”

129) Haughey, “Myth and Fact”

out Denver.

The most promising element of a “smart” transportation system at Riverfront Park is its direct access to Union Station, giving the residents access to every RTD route in Denver. Walking across the Millennium Bridge at Riverfront Park provides direct and safe access to Union Station and thus almost every bus and light rail route. Survey results show that 80% of participants bike frequently or sometimes with 83.33% preferring to bike on greenspace or on separate paths. This high proportion of cyclists could have to do with direct access to high quality cycling infrastructure as well as access to bike-share stations. The preference to bike on greenspace or on separate paths could be influenced by the direct access to the multi-use path running through the commons park and the rest of Denver’s internal greenspace; the majority of participants spoke to aspects of pleasure rather than safety for their preferred cycling routes.



JUXTAPOSITION

Having “smart” transportation incorporates aspects of local connectivity and accessibility via alternative modes of transportation as well as the automobile. A “smart” transportation network allows any individual, with any mode, to get where they need to go. Within the principles of New Urbanism a reduced dependence on the automobile is a core criteria of having a “smart” transportation network.

The Stapleton neighborhood’s transportation system

is somewhat “smart,” although the neighborhood has sufficient access to an existing bus network, the street network design is primarily auto centric as I discussed previously. One study showed a higher than average vehicle usage for Stapleton as compared to other neighborhoods. More frequent and direct access to the RTD’s bus network as well as the addition of safer cycling infrastructure would enhance Stapleton’s transportation system.

Highland Garden Village’s transportation system meets more of the criteria for a “smart” transportation system than the Stapleton neighborhood. The street network at HGV has more pedestrian infrastructure and more narrow streets. HGV should install internal cycling infrastructure that connects to external cycling infrastructure as to allow greater connectivity via bike. As redevelopment occurs in the Highland neighborhood there will be a greater need for higher level service bus routes for residents to use, although in its current single-family manifestation there is not the demand for such a system.

Riverfront Park represents the epitome of a “smart” transportation system as described by the principles of New Urbanism. Residents at Riverfront Park have access to the highest quality transportation network available in Denver; including a vast pedestrian and cycling infrastructure as well as access to Union Station’s bus and light rail system. Resi-

dents of Riverfront Park are provided with extremely high mobility and connectivity to downtown Denver as well as regional connections that are convenient and accessible.

The criteria set forth by NU Principles does suggest

SMART LOCATION:

STAPLETON

that Stapleton is in a “smart location” because it utilized previously developed land that is “urban adjacent;” which depends on how you define “urban.” Urban is being used morphologically for this description. The “urban” adjacent around the Stapleton, could be more accurately described as “suburban adjacent;” when construction began in 2001, the former Stapleton International Airport was on the fringe of Denver, adjacent to suburban single family housing tracts.¹³⁰ Stapleton, did however, manage to preserve and restore a few existing buildings from the old airport; including a control tower, a large parking garage and an aircraft hangar.¹³¹ Stapleton has done a good job integrating new amenities into their development including shopping centers, schools, and places of work that increase the accessibility of Stapleton.¹³² Stapleton’s low accessibility, as discussed in a later section, greatly contributes to its lower ranking in smart location.

¹³⁰) Community Planning and Development “Stapleton Site Development Proposal” (1999) City of Denver

¹³¹) ULI “Stapleton Case Study”

¹³²) Ibid.

HIGHLAND GARDEN VILLAGE

Highland Garden Village achieves many of the “smart location” criteria established by NU Principles. The HGV development is located on the former Elitch Gardens Amusement Park, which qualifies it as a greyfield urban infill project; although, the surrounding “urban” context is primarily historic suburban single-family housing tracts.¹³³ There are several structures from the historic Elitch Gardens Amusement park that were preserved during planning and development. The Carousel Pavilion, which is now used to host community events, as well as the Elitch Garden Theatre, which is also used to host community events; although some survey participants claim it is underused and has been overtaken by undesirable weeds and slight decay as a result of neglect.

The accessibility of the surrounding region is questionable. HGV is connected to several bus routes, but the amenities in the surrounding area are limited primarily to a strip of shops a few blocks north on Tennyson St. HGV has integrated numerous amenities on-site including a grocery store and fitness center. Highland Garden Village’s moderate accessibility, contributes to its ranking in smart location; these qualities of accessibility will be discussed in a later section.

¹³³) ULI “Highland Garden Village Case Study”

RIVERFRONT PARK

Riverfront Park represents the epitome of New Urban Smart Location; this brownfield urban infill development, which redeveloped an abandoned rail yard, is located at the heart of downtown Denver. Due to its vibrant urban context, Riverfront Park has created a sustainable and active environment for its residents to engage with the city in a meaningful way. Because of its location, Riverfront Park has access to a wide array of services and amenities, as well as many transportation options, that provide residents with high mobility and accessibility compared to other New Urbanist developments. There were only a few existing structures on the site, prior to redevelopment, that could not be preserved due to the degradation caused by abandonment. The high accessibility of Riverfront Park contributes to its ranking in smart location, these qualities will be discussed in a later section.

JUXTAPOSITION

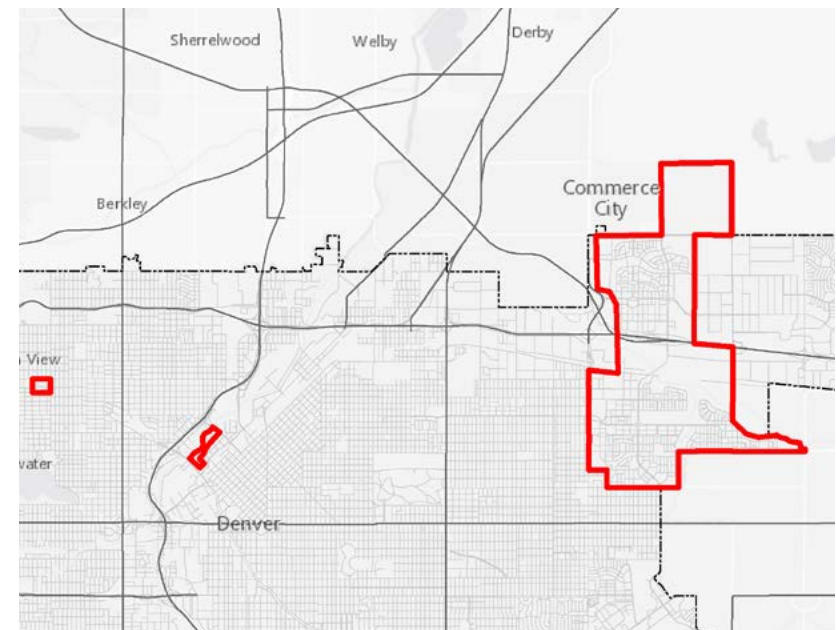
The location of new development must be “smart.” Being “smart” is not difficult, there are plenty of underutilized, foreclosed or vacant properties scattered throughout the urban context of Denver, and for that matter every other city. The issue with urban infill is that it often reduces profit margins and is more time consuming for developers, which makes it a less fiscally attractive development project.

Riverfront Park represents the epitome of “smart” location, thriving in the core of downtown Denver, directly adjacent to high quality alternative transportation, and with access to endless services and amenities within walking distance. Riverfront Parks’ location amongst the surrounding urban context provides it with high valuable of sustainability both environmentally and socially that are heavily influenced by its smart location.

Highland Garden Village is embedded with many criteria of “smart,” rehabilitating a former amusement park, with access so various services and amenities with connections to a few bus routes. However, HGV is located in the heart of Denver’s historic expansion, which at the current moment makes it a stranded progressive project amongst a sea of historic single family homes. Perhaps in thirty years it

could be surrounded by familiar new urban developments.

The Stapleton neighborhood represents the least of NU smart location principles, although it utilized a previously developed site at the time of its construction it developed at the absolute urban fringe of Denver, surrounded by highly sprawled single-family suburban housing tracts with minimal accessibility. Over time, as more people have moved to that region, for one reason or another, various services have been extended to the boundaries of Denver. Stapleton takes up an extremely large amount of land with minimal density, which regardless of its location is perpetuating a cycle of unsustainable land use.



23 : locations of each neighborhood, from left to right: Highland Garden Village, Riverfront Park, Stapleton

COMPACT AND DENSE:

STAPLETON

Although the principles of New Urbanism do not identify thresholds for “compact and dense,” the LEED-ND evaluation checklist, which the Congress for New Urbanism partnered in creating, identifies 7-10 Du/Ac as being “compact.”¹³⁴ In Stapleton’s current manifestation, there are 12,000 residential units on 4,700 Acres of land, which correlates to a gross density of 2.6 Du/Ac; this extremely low density is a result of not only building typology but also due to the vast amount of green space incorporated into the site, which comprises almost one-third of the sites land.¹³⁵

By their principles I do not believe Stapleton achieved a “compact and dense” form by any means. Although, the Stapleton neighborhood did adhere to the principles of developing closely to projected growth rates. As downtown Denver becomes more and more expensive, low-medium income families and individuals will be forced to live in more affordable neighborhoods such as Stapleton.

134) LEED V4 for Neighborhood Development (2014)
135) ULI “Stapleton Case Study”



24 : demonstrating the vast expanse of Stapleton on the urban fringe of Denver

HIGHLAND GARDEN VILLAGE

Highland Garden Village, compared to its surrounding suburban context, does represent a compact and dense development. HGV contains 306 residential units on a 27-acre site, which correlates to a gross density of 11.33 Du/Ac.¹³⁶ This density exceeds the 7-10 Du/Ac threshold established by LEED-ND as being “compact,” these densities are also high enough to support a moderate frequency transit network as well as common commercial and retail services. These densities correlate to what could be developed in the surrounding neighborhoods in the next few decades.

136) ULI “Highland Garden Village Case Study”



25 : Apartment style dwellings in the heart of Highland Garden Village

RIVERFRONT PARK

Riverfront Park greatly exceeds all “compact and dense” criteria established by the New Urbanist Principles. Riverfront Park contains 1,859 residential units on a 23-acre site directly adjacent to downtown Denver. These metrics correlate to a gross residential density of 80.69 Du/Ac.¹³⁷

¹³⁷) ULI “Riverfront Park Case Study”



26 : The Glass House, the epitome of compact and dense for New Urbanism

JUXTAPOSITION

This is perhaps the greatest discrepancy between New Urbanist neighborhoods. An appropriate form for new development responds to the surrounding environment, which for New Urbanism means compromising on its principles. I take issue with movements that preach but do not practice; it weakens their legitimacy and that of other models seeking to change traditional development patterns.

Stapleton’s absurdly low density attracts a certain market, those who want their own yard, those who desire the heavily marketed “community” and those who don’t mind driving their car everyday. This marketing is indisputable if one simply browses Stapleton’s web-page. But Stapleton did

so as a response to the surrounding community and as to incorporate large amounts of green space. Highland Garden Village exceeds the density of its surrounding environment, almost as a notion of change to come. The density at HGV is not excessive but makes a clear point that this is where Highlands is headed, hopefully. Riverfront Park greatly exceeds both of these developments in being “compact and dense,” with a density of over 80 Du/Ac it fits in with its surrounding context, the majority of units were sold before construction was completed, giving credibility to how desirable the urban realm can be. I’m not advocating that everyone should live in a high-rise apartment building, but rather that a movement concerned with environmental sustainability should not compromise their ideals for profit and prestige.



27 : The Glass House at Riverfront Park: Dense Urban Infill directly adjacent to Union Station



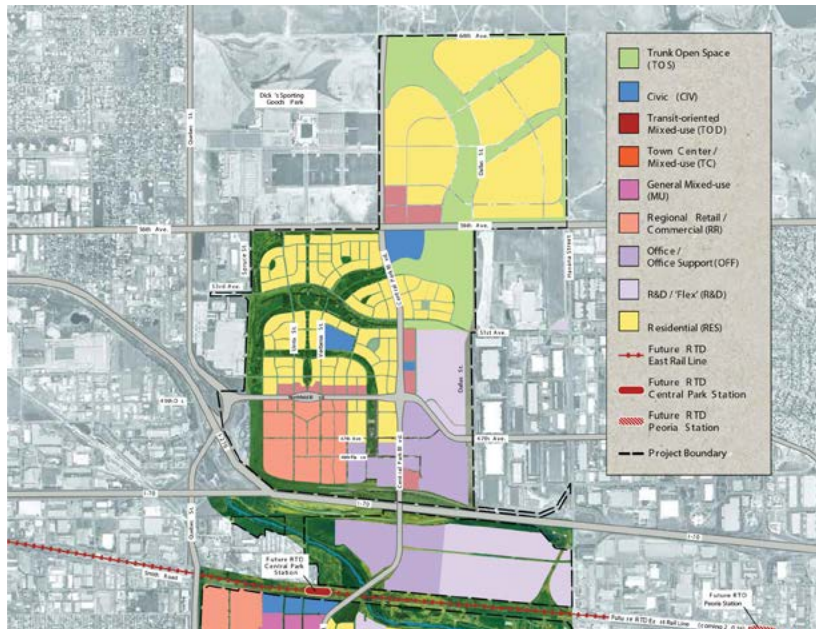
28 : Stapleton single-family homes with superfluous greenspace

MIXED USE AND DIVERSITY STAPLETON

The Stapleton neighborhood contains 12 housing options to ensure a variety of household incomes and family profiles, the homes at Stapleton range from \$123,000 units to \$530,000 single-family units; the 2010 census tract suggests that Stapleton has many family profiles and some demographic diversity.¹³⁸ Stapleton’s location on the urban fringe of Denver allows the average homes prices and me-

¹³⁸) ULI “Stapleton Case Study”

dian incomes to create a diverse neighborhood, this is one advantage of building further away from the urban core but of course comes with many drawbacks. Survey results asking about diversity within the neighborhood suggest that the majority of residents are families. When asked, what types of people live in your neighborhood, 15 people said families, 7 said older couples, 6 said seniors, and 3 said young adults. 26.66% feel their neighborhoods are diverse in terms of demographics, 53.33% reported little diversity and 20% said it was hard to say.



29: Stapleton Land use plan demonstrating diversity

HIGHLAND GARDEN VILLAGE

Highland Garden Village contains 7 housing options ranging from single-family homes to cohousing units, and 11-different on-site land uses including a small grocery store: Housing prices range from \$153,795 affordable cohousing units, to single family homes at \$429,666.¹³⁹ Highland Garden Village did surprisingly well incorporating these varieties of uses within the neighborhood, although I am unsure of the success of these establishments. Often a minimal density of 10 du/ac is needed to support small retail stores.¹⁴⁰

Residents at HGV reported primarily families and older adults living in their neighborhood: 12 said families, 8 said older couples, 6 said seniors, and 3 said young adults. 53.33% feel their neighborhood is demographically diverse, 1/3 did not feel their neighborhood is diverse, and 13.33% said it was hard to tell.

139) ULI "Highland Garden Village Case Study" . Home prices estimated using smartdenverhomeprice.com powered by the Thrive Real Estate Group. "How to Calculate Demand for Retail," New Urban News, March (2004) 10–11.

140) Ibid.



30 : Highland Garden Village land use plan demonstrating diversity

RIVERFRONT PARK

Riverfront Park contains 9 housing typologies ranging from studio apartments to luxury penthouse with 15% of all units regulated as affordable. Within the 14 residential projects on site, houses prices start at \$180,000 for affordable rate studio apartments to \$1,028,000 penthouses.¹⁴¹ The Glass House, the largest and most diverse residential project, contains 73 different floor plans and at a wide variety of price points; Riverfront Park contains 9 internal land uses ranging from small coffee shops and restaurants, to museums and retail.¹⁴² The surrounding land uses at Riv-

141) ULI "Riverfront Park Case Study"

142) Ibid.

erfront Park offer a variety of services and amenities that are accessible to residents. Survey results suggest that Riverfront Park is primarily composed of older couples: 2 reported families, 12 said older couples, 6 said seniors, and 2 said young adults. Interestingly enough, only 20% feel their neighborhood is diverse and almost half, at 46.67%, said it was hard to tell. I speculate this is because this neighborhood is very active and it might be hard to tell who actually lives in ones neighborhood.



31 : Riverfront Park Land use plan demonstrating diversity

JUXTAPOSITION

Offering a wide range of housing typologies, price points, and internal land uses helps to support a vibrant and accessible community. The challenges facing mixed use and diversity often correlate with the available land, developer preferences and marketing in order to attract retail and commercial establishments. Attracting a diverse community requires a strong variety of housing typologies, price points and cultural inclusion that would organically create a diverse community.

The Stapleton neighborhood offers the widest range of housing typologies and has a moderate range of price points; census data suggest that the Stapleton neighborhood does achieve moderate demographic and socioeconomic diversity within the neighborhood. Stapleton also achieves creating a spectrum of internal land uses.

Highland Garden Village also manages to achieve a wide variety of housing typologies and internal land uses that make the neighborhood more accessible and attractive. The design helps to support greater demographic and socioeconomic diversity.

Riverfront Park also achieves the criteria set forth by New Urbanist principles; this development contains a wide range of housing typologies, and especially price points,

mixing affordable units with luxury pent houses. The urban context of Riverfront provides access to a wide variety of services and amenities in the surrounding area as well as internally.

ACCESSIBILITY STAPLETON

Stapleton's accessibility can be evaluated by several factors including mobility, affordability, land use factors, and connectivity. Accessibility can be understood as a culmination of other New Urbanist principles such as walkability, smart transportation, smart location, and mixed use and diversity.¹⁴³ As I have discussed previously, Stapleton's pedestrian environment and connectivity are lacking in quantity and quality, therefore degrading the environment's accessibility. The location of Stapleton makes accessing services and amenities in downtown Denver difficult by any mode except for a vehicle. Although RTD service is available to residents of Stapleton, it takes over an hour to reach downtown.

A positive factor of Stapleton's accessibility is its great variety of uses and housing typologies that offer a diverse environment for residents. However; the majority of Stapleton's on-site amenities are clustered on the west edge, reducing access for residents in the eastern part of Stapleton. These isolated residents could either walk upwards of

143) Litman "Evaluating Accessibility" 6

an hour or must take their vehicle to reach these amenities.

Overall, Stapleton is not an accessible environment nor in an accessible location due to its position in Denver as well as its vast sprawl that increases the distance between destinations as well as makes it more difficult for services to reach a majority of the development.¹⁴⁴ Ultimately, the sprawled urban form of Stapleton makes it more difficult to create an accessible environment; the low-density, somewhat suburban, style of living at Stapleton comes with the drawbacks of auto-dependency and reduced accessibility.

Survey results show that only 26.66% of participants feel they have access to a variety of services and amenities within walking distance. This is primarily because the western portion is over half a mile away from any location offering these. All participants go to Quebec Square, a commercial/retail cluster on the western edge of Stapleton, to shop for groceries; 26.66% are within a 5-minute drive, 73.33% are within a 10-minute drive. 53.33% work downtown or in a peripheral neighborhood, 80% of them drive to work and 20% take the bus or bike' 87.5% reported this is their primary choice for reasons of convenience.

¹⁴⁴) ULI "Stapleton Case Study"

HIGHLAND GARDEN VILLAGE

Highland Garden Village (HGV) creates a moderately accessible environment for the residents, primarily due to its compact nature and connection to services and amenities. HGV's pedestrian environment, although lacking some infrastructure, is compact and accessible with high connectivity internally and to peripheral development. HGV is located in the center of the Highlands neighborhood which contains clusters of services and amenities with the neighborhood. HGV's transportation connections do slightly reduce the area's accessibility, the surrounding development does not yet have the density necessary to support a higher level of service bus route, nor call for the addition of improved cycling infrastructure.¹⁴⁵

Overall, HGV provides an environment of moderate accessibility; although the development is located in a tract single family neighborhood it still maintains a diversity of uses that create an accessible environment. Transportation options are a limiting factor of HGV's accessibility although this will improve as new development occurs in the area. Internally, the accessibility of HGV supports an active pedestrian environment.

The survey results show that 86.66% feel they have access to a variety of service and amenities within walking

¹⁴⁵) ULI "Highland Garden Village Case Study"

distance and 73.33% use a grocery store within walking distance. This element of accessibility speaks to the smart location of HGV. 40% work downtown or in a peripheral neighborhood, of these 2/3 drive to work primarily for reasons of convenience. While these residents do have access to bike lanes and bus routes, they simply preferred to drive because either the bus takes too long or is unreliable, and that they do not necessarily feel comfortable using the on-street bike lanes.

RIVERFRONT PARK

Riverfront Park provides a highly accessible environment for its residents; because of its location at the heart of downtown Denver, Riverfront Park provides high mobility, in terms of connections and transportation options, for its residents that can only be obtained in a dense urban environment. Riverfront Park is highly accessible due to factors previously discussed such as its walkability, smart location, and smart transportation that makes the environment highly accessible for residents.

The survey results show that 93.34% feel as though they have a variety of services and amenities within walking distance of their home. 86.67% primarily use a grocery store within walking distance. Approximately 2/3 of the participants work downtown or in a peripheral neighborhood; of

these 2/3, 40% primarily drive to work, 30% use RTD services, and 30% walk or bike. These results, although collected with a minimal sample size, begin to demonstrate a trend related to access to high quality public transit and ones likelihood of using the provided service.

JUXTAPOSITION

Accessibility is somewhat of a recent metric for evaluating the built environment; the definition comprises factors of mobility, connectivity, and land uses which essentially tries to determine how easy it is to reach various destinations.¹⁴⁶ The location and urban form, whether its compact or sprawled, is a highly determinative factor when evaluating accessibility.

Mobility and land use are the two primary factors of accessibility that make Riverfront Park accessible. Its urban context and variety of transportation options create high mobility, while the internal and external land uses provide a variety of services and amenities that residents can access by a means of their choosing with comfort and ease. Overall, Riverfront Park is highly accessible, it provides a convenient and diverse environment that residents enjoy using.

¹⁴⁶) Litman "Evaluating Accessibility" 2

The Stapleton neighborhood provides the least accessible environment for its residents; the reason for such is primarily location away from the urban core as well as its sprawled form which reduces the mobility and connectivity options for residents. While Stapleton provides an array of amenities, if it takes one thirty minutes to get there by any other mode than the vehicle, such that the environment is not very accessible.

Compared to Stapleton, Highland Garden Village is an example of a neighborhood with moderate accessibility; internally the environment is accessible due to its high mobility and connectivity, but due to its location in Denver it is difficult to reach other areas by alternative transportation.

Riverfront Park is the most accessible environment of the three neighborhoods. The dense urban area, in close proximity to transit and a variety of services and amenities, creates this accessibility. The difference in accessibility of these three neighborhoods is primarily differentiated by their locations and their urban form, a compact and centrally located development will ultimately produce more accessible qualities that enhance the usability of the environment for the residents.

TRADITIONAL NEIGHBORHOOD STRUCTURE STAPLETON

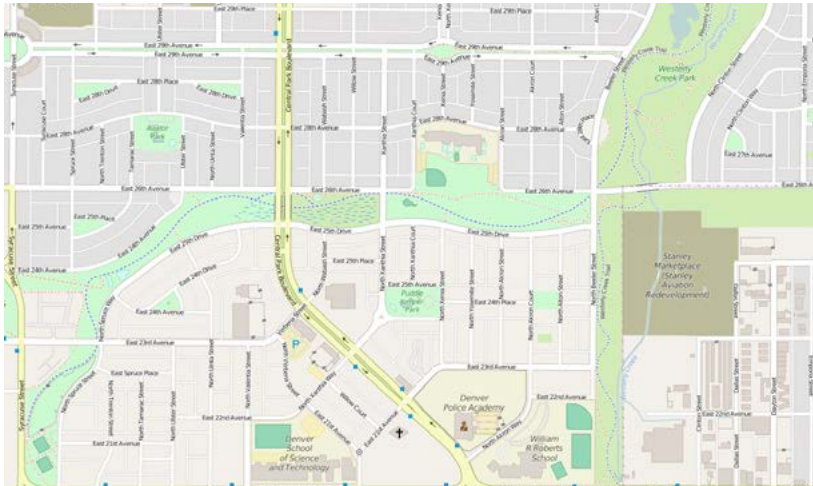
Stapleton, due to its vast expanse, has seven community centers throughout the development that act as focal points for each of these centers; these community centers offer public spaces as well as services and amenities that create the “traditional neighborhood structure” (TNS) depicted in New Urbanist principles.¹⁴⁷ A component of TNS is having “beauty, aesthetic and human comfort, and creating a sense of place,” are somewhat immeasurable qualities, although aspects such as a safe, high quality pedestrian infrastructure, access to public and green space, as well as access to services and amenities help define these characteristics.¹⁴⁸

Stapleton’s auto centric street network, minimal pedestrian infrastructure and access to a variety of services and amenities weaken its TNS; although Stapleton does provide access to a vast amount to various communities centers as well as an 80-acre park, 2 greenways, and 123-acre wildlife refuge. Aspects of livability, community and accessibility also contribute to a TNS. Survey results suggest that Stapleton does have a strong TNS; 80% of participants said they personally know a few or more neighbors and 60% of them feel as though they have a sense of community in their neighborhood. Suggesting that elements of the TNS contribute to

¹⁴⁷) ULI “Stapleton Case Study”

¹⁴⁸) Congress for New Urbanism Charter Principles and Canons

a stronger sense of community. 100% of the participants feel that their parks and public space are safe and inviting and how they feel comfortable using these spaces; 86.67% reported using these spaces occasionally.

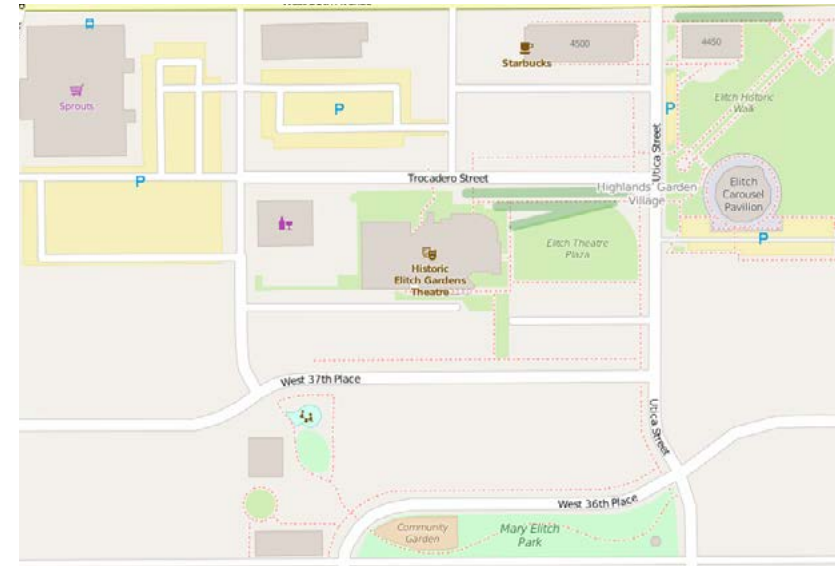


32 : Section of Stapleton demonstrating aspects of a Traditional Neighborhood Structure

HIGHLAND GARDEN VILLAGE

Highland Garden Village (HGV) expresses numerous values of a Traditional Neighborhood Structure (TNS) although lacks on a few crucial elements. HGV has a clearly identifiable center with 3.2-acres of public open space in the form of plazas, parks, community gardens and playgrounds. ¹⁴⁹HGV's pedestrian realm, in terms of mobility and comfort, do need improvement; the sidewalks are on average 5' with minimal pedestrian safety infrastructure at internal street intersections. HGV does offer a variety of services and ame-

nities within the development. Survey results suggest that HGV does have a strong TNS; 80% of participants personally know a few or more neighbors and 80% occasionally or often socialize with their neighbors; of these participants 46.67% feel that they have a sense of community in their neighborhood. In terms of parks and public spaces; 73.33% felt their public spaces are safe, inviting and feel comfortable using them. 80% said they use these spaces occasionally or often, which correlates with many aspects of a strong TNS.



33 : Highland Garden Village demonstrating aspects of a Traditional Neighborhood Structure

149) ULI "Highland Garden Village Case Study"

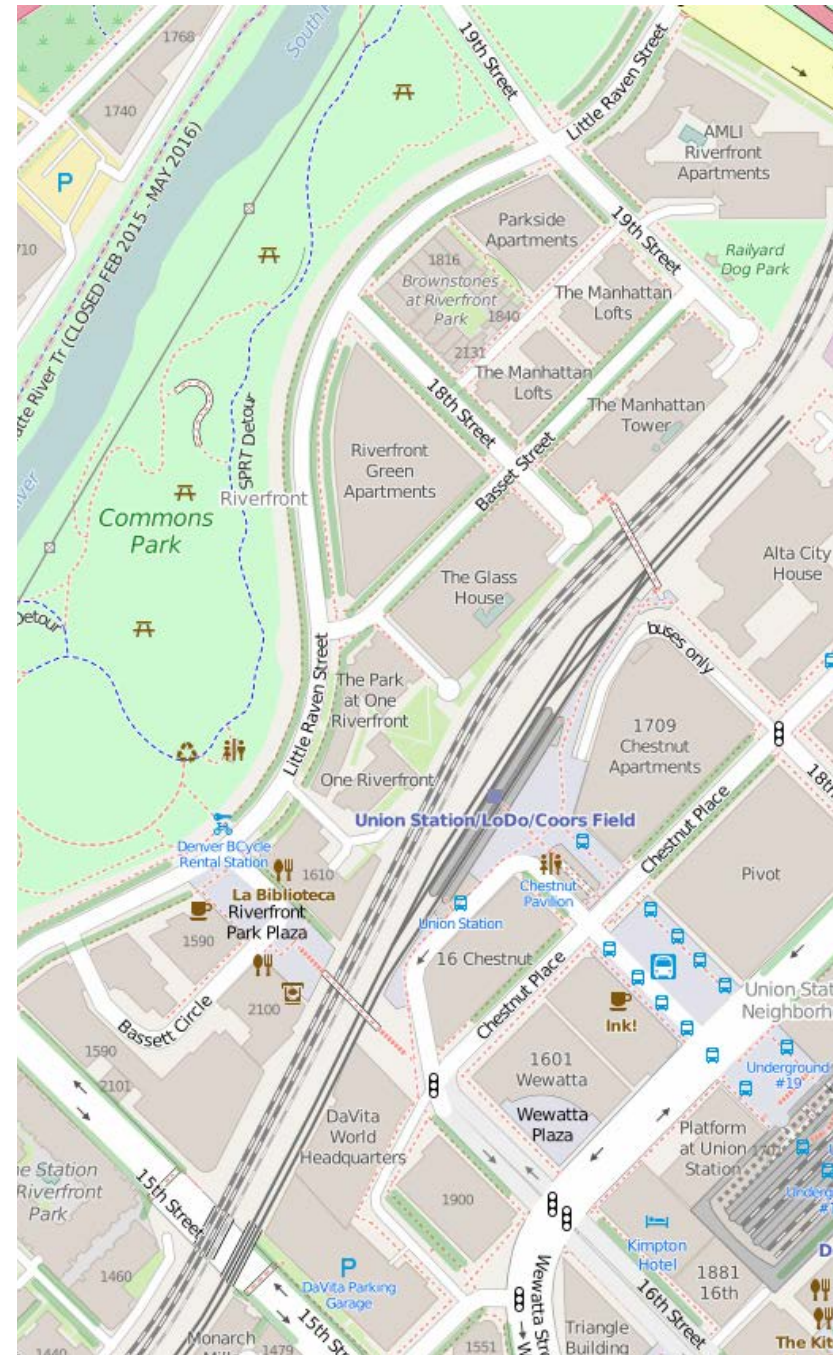
RIVERFRONT PARK

Riverfront Park embodies many of the characteristics of a Traditional Neighborhood Structure (TNS) but also lacks others due to its dense urban context. Riverfront Park has a clearly identifiable center, The Millennium Bridge Plaza, and a definable edge bordered by Union Station and The Commons Park.¹⁵⁰ Riverfront Park has a community foundation that focuses on arts and education for the community.¹⁵¹ The high-rise towers at Riverfront Park do not necessarily create a human scale environment, although they do create the density necessary to stimulate sufficient social interaction. The public realm at Riverfront Park is highly active with many community events, groups and programs.

Survey results suggest that Riverfront park does have a strong TNS; 73.33% of participants personally know a few or more neighbors and 80% occasionally or often socialize with their neighbors; of these participants 46.67% feel that they have a sense of community in their neighborhood. In terms of parks and public spaces; 2/3 felt their public spaces are safe, inviting and feel comfortable using them. A few participants reported a lack of activity as well as homeless and transient populations being a reason for their answers. Although despite that, 73.33% said they use these spaces occasionally or often.

150) ULI "Riverfront Park Case Study"

151) Ibid.



34 : Riverfront Park demonstrating aspects of a Traditional Neighborhood Structure

JUXTAPOSITION



Creating a Traditional Neighborhood Structure is no easy feat, the characteristics described in the principles of New Urbanism are subjective and are difficult to measure and value. Stapleton, Highland Garden Village, and Riverfront Park, all exhibit qualities of a Traditional Neighborhood Structure, but they vary in how they achieve this goal. Stapleton, due to its vast expanse, requires multiple neighborhood centers as focal points of activity; Its expanse allows it to exhibit more qualities of a TNS such as more parks and public areas, simply because they have the room to do so. Riverfront Park, however, and Highland Garden Village, provides a good middle ground between having sufficient densities for urban environments while also focusing on creating public spaces and a pedestrian environment that support the ideals behind a traditional neighborhood structure.

THE BREAKDOWN

The matrix on the next page is a graphic representation of my analysis of these three New Urbanist neighborhoods. As you can see there are some differences on whether or not new New Urbanist neighborhoods achieve the principles from which they are designed from. While all three neighborhoods were able to achieve aspects of sustainability, mixed use and diversity, and traditional neighborhood structure; other factors such as smart transportation, smart location, compact and dense, and accessibility, all of which are somewhat interrelated and dependent upon one another, had larger discrepancies. Please see appendix 1 for a more detailed breakdown of each of these categories.

BREAKDOWN:

	HIGHLAND GARDEN VILLAGE	RIVERFRONT PARK	STAPLETON
WALKABILITY	EXCEEDS	EXCEEDS	FAILS
SUSTAINABILITY	EXCEEDS	EXCEEDS	SATISFIES
COMPLETE STREETS AND “SMART” TRANSPORTATION:	SATISFIES	EXCEEDS	SATISFIES
SMART LOCATION	SATISFIES	EXCEEDS	FAILS
COMPACT AND DENSE	SATISFIES	EXCEEDS	FAILS
MIXED USE AND DIVERSITY	EXCEEDS	EXCEEDS	EXCEEDS
ACCESSIBILITY	SATISFIES	EXCEEDS	FAILS
TRADITIONAL NEIGHBORHOOD STRUCTURE	SATISFIES	SATISFIES	EXCEEDS

EXCEEDS 
 SATISFIES 
 FAILS 

These categories were evaluated through several methods, this is simply a graphic representation. please see appendix 1 for more detail.

CONCLUSION AND DISCUSSION:

URBAN JUXTAPOSITION: WHY THE INCONSISTENCIES?

The two largest downfalls of New Urbanism, as well as the two most significant factors of environmental and social sustainability are transportation and land use.¹⁵² A synthesis between transportation and land use is difficult to achieve, requiring a multifaceted effort amongst developers and municipalities. A strong connection to local and regional contexts, as well as increased densities, support transportation options which will result in a more environmentally and socially sustainable neighborhood form that responds to the shortcomings of some New Urbanist developments. The inconsistencies in New Urbanist developments in Colorado, as demonstrated by the differences in Stapleton, Highland Garden Village, and Riverfront Park, are caused by many factors ranging from developer preferences to national transportation standards.¹⁵³

The inconsistencies in such a movement, however, undermine its intentions. New Urbanism is trying to create environmentally and socially sustainable developments through their charter principles. Although; New Urbanists are usually not the ones developing, via financing, their proj-

152) Fulton, "Challenges Conventional Planning" 3, 6. Talen "Culture of Criticism," 16 Ellis "Critiques and Rebuttals," 273. Owen, "Green metropolis" 56
153) Ibid.

ects which in turn result in a loss of control over the final outcome. The differences amongst Stapleton, Highland Garden Village, and Riverfront Park weakens the validity of the claims made by such a movement.

The Congress for New Urbanism advocates and represents many admirable principles in terms of creating more environmentally and socially sustainable neighborhoods, but often hits a roadblock. These barriers to New Urbanism, and other models of progressive design, have limited the implementation of sustainability principles in practice. Models such as Transit Oriented Development (TOD) have begun to work directly with municipalities and developers to create more connected, compact and accessible environments; these models do not compromise their principles for profit like many New Urbanist developments have.¹⁵⁴

The largest roadblock to progressive, sustainable neighborhood development is at the institutional level. While cultural ideology and norms have a significant impact on the user behavior and preferences in the built environment, the institutional level of analysis provides the most significant insights into why New Urbanist neighborhoods often fail at implementing their principles. Although New Urbanism is often conceived as a universal solution, most believe that it

154) Haughey, "Myth and Fact" 3

“is only one alternative to suburban sprawl” and that it will be most effective in a broader planning context that would be composed of “significant investments in transit, incentives to reinvest in the inner city, and disincentives to build at the metropolitan fringe.”¹⁵⁵ New Urbanism’s functionality, in terms of its effectiveness to achieve its goals, as a tool in the broader planning context is crafted by a wide range of contemporary issues that do not support the implementation of New Urbanism principles into sustainable neighborhood developments. My research findings align with scholars critiquing New Urbanism; especially one in particular, William Fulton who believes that while New Urbanism provides one alternative to sprawl and that it “may have difficulty dealing with a wide range of contemporary issues that generally fall into five broad categories: scale, transportation, planning and codes, regionalism, and marketing,” such findings are consistent with my own research.¹⁵⁶

The scale impediment to progressive design speaks to the profit margins of development on rural lands as opposed to urban areas. Developers often buy large plots of rural land in order to maximize their profits, able to fit a profitable number of units on cheap land with fewer regulations.¹⁵⁷ Urban infill can be profitable as well, but it comes

155) Fulton. “Challenges Conventional Planning”, 7

156) Ibid.

157) Ibid.

with more regulations, expensive land, and smaller parcels; developers can often not achieve their desired profit margins in urban sites, which makes rural lands more attractive for development.¹⁵⁸ Although developments around transit corridors have proven to be more profitable for developers, this is one of the incentives that TOD advocates to developers; Transit corridors induce growth, which developers can sell for higher profits while supporting a more sustainable model than new urban sprawl.¹⁵⁹

Transportation is one of the more difficult roadblocks to overcome; standards set forth by the Federal Highway Administration as well as the Emergency Response Institutions have supported auto-oriented developments and limited progressive street design.¹⁶⁰ Conventional traffic engineering standards and the massive scale of emergency vehicles has made progressive street design nearly impossible.¹⁶¹ Europe, for example, does not really have this issue because their transportation and emergency response initiatives are framed by their existing infrastructure, which is compact and dense. Europe’s emergency response vehicles must conform to their existing transportation infrastructure, as opposed to in the United States where transportation infrastructure

158) Ibid.

159) Haughey, “Myth and Fact”

160) Marshall, “The case of Stapleton,” 152

161) Ibid.

must conform to emergency response standards.¹⁶² This suggests a needed restructuring of hierarchy amongst transportation standards and our built environment. In terms of mode choice and travel behavior there are many opportunities for municipalities to engage in more sustainable practices; some experts believe that if “auto subsidies were reduced; public policies and investments were shifted toward transit, bicycle and pedestrian modes; and positive land use/transportation synergies were pursued” then we could achieve a shift in travel behavior that would have substantial impacts on our environmental sustainability.¹⁶³

Planning and codes are the most critical factors in developing more sustainable patterns of growth. These rules and regulations have the power to either inhibit or support progressive initiatives that would have substantial impacts on our sustainability.¹⁶⁴ Many experts believe that local and state governments would be the most effective organizational structure to develop progressive policies and codes that would “best respond to local environmental conditions and issues, and because public sustainability activism is more meaningful and effective at the local level.”¹⁶⁵ Unfortunately, very few municipalities have had the courage to make sub-

stantial strides in progressive urban policy. I believe that most likely out of fear of ridicule that could impact the next election.

The adoption of green building policies, both in construction practice and in planning and policy can be a widespread initiative that is then tailored to local conditions; most of which would be focused on the synergy between transportation and land use.¹⁶⁶ Regionalism is a matter of public perception and cultural restraints. New Urbanism especially has “struggled to move the public perception of their movement” in order to gain widespread popularity as a solution to suburban sprawl.¹⁶⁷ Although; New Urbanism is only one of many growth models that has received criticism.

Architects, planners, politicians and the general public all have different preferences of lifestyle and different views on how their environment should grow and develop. Many progressive initiatives are “overridden by social, economic or cultural variables.”¹⁶⁸ Many sustainable design movements have failed largely because their ideals did not “enjoy widespread acceptance in the marketplace.”¹⁶⁹

Cultural preferences cannot be influenced easily, it takes generations of social development in order to change

162) Potter, George. “Mobile Fire Apparatus, United States vs Europe.” Fireengineering.com.

163) Schaeffer, K. H., and Elliot Sclar.(1975) Access for All: Transportation and Urban Growth. Harmondsworth, Eng.: Penguin.

164) Fulton. “Challenges Conventional Planning” 4

165) Theaker, Ian, and Raymond Cole. 2001. The role of local governments in fostering “green” buildings:

166) Retzlaff, Rebecca (2008) The Use of LEED in Planning and Development Regulation, Journal of Planning Education and Research 10.1177

167) Talen “Culture of Criticism,” 325

168) Ellis “Critiques and Rebuttals,” 261

169) Fulton. “Challenges Conventional Planning,” 4

these preferences.¹⁷⁰ The Netherlands, for example, has been idolized by urban planners as being a mecca for sustainable culture; this did not happen overnight, children have been bred to embrace cycling, transit and compact urban forms as a necessity of life rather than a needed change. This concept will not transition easily to the United States as we have been breeding a culture of convenience that makes cultural preference difficult to change.¹⁷¹ Although I believe as time passes and as Generation Y transitions into professionals, tax payers and decision makers, that cultural norms will begin to change to embrace these ideals of sustainability.¹⁷²

These inconsistencies in New Urbanism suggest that perhaps they may have found a 'middle ground' to actually get their projects built rather than being too radical or too conventional, effectively rendering their movement as incremental change. While New Urbanism may have compromised between crossfires of criticism to actually build their developments, their reasoning is to stop the continuous growth of the suburbs. In this context New Urbanism has been criticized for building in the "urban fringe" where "about 95% of current building activity is occurring;" Therefore the most productive choice is to ensure that "new suburban growth mixes uses, provides a wide range of housing types, contains

170) Michael Tavel (2015) The Culture of Green Neighborhoods

171) John Pucher & Ralph Buehler (2008) Making Cycling Irresistible: Lessons from the Netherlands, Denmark and Germany, Transport Reviews, 28:4, 495-528,

172) Owen, "Green metropolis"

walkable streets and is more transit friendly"¹⁷³ This may seem like a productive route, but New Urban sprawl is not a long term answer nor a universal solution to the increasing demands of growth and consumption.

In short, our built environment has been, and will continue to be, a battleground between political parties, professionals and the general population who all have different preferences and values. Many remedies to suburban sprawl have been synthesized but lack the marketing power to gain momentum as a cultural shift. I am optimistic about generations to come. Challenges such as climate change have become a widespread concern, especially among younger generations who are passionate about the environment. As time passes and as more culturally progressive generations come into positions of influence and begin to breed generations to come, I believe we will see a significant change in cultural preferences that will support more compact and sustainable urban forms.

I agree with many scholars and professionals that New Urbanists should welcome more precise and thorough research, especially on "issues such as traffic reduction, the conditions for successful Transit Oriented Development, techniques for retrofitting conventional suburbs, the connection between New Urbanism and regional planning, the

173) Ellis "Critiques and Rebuttals," 283

morphology of public space, and an array of other issues.”¹⁷⁴

Although New Urbanism is often viewed as a universal solution, it is one of many alternatives to conventional suburban sprawl. While New Urbanism prescribes many admirable and worthwhile principles, it will probably be more effective applied to a larger planning context that “includes significant investments in transit, incentives to reinvest in the inner city, and disincentives to build at the metropolitan fringe;” rather than as a piecemeal approach to altering contemporary urban forms.¹⁷⁵

174) Ellis “Critiques and Rebuttals,” 261-291

175) Fulton. “Challenges Conventional Planning” 5

APPENDIX:

APPENDIX 1:

Supporting literature and data for the evaluation of New Urbanist Neighborhoods based upon criteria established. (See next page)

APPENDIX 2:

Interview/Survey form

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10. Photo Credit: Avery Lajeunesse, Stapleton site visit #1
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12. Photo Credit: Avery Lajeunesse, Stapleton site visit #1
13. Photo Credit: Avery Lajeunesse, Stapleton site visit #1
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15. Photo Credit: Avery Lajeunesse, Stapleton site visit #1
16. NATCO Urban Street Design Guidelines
17. NATCO Urban Street Design Guidelines
18. Open Street Map Image - updated January 2016
19. Photo Credit: Avery Lajeunesse, Stapleton site visit #1
20. Open Street Map Image - updated January 2016
21. Open Street Map Image - updated January 2016
22. Open Street Map Image - updated January 2016
23. Open Street Map Image - updated January 2016
24. Photo Credit: Avery Lajeunesse, Stapleton site visit #1
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FINDINGS

WALKABILITY	NU GOAL METRICS	CRITIQUES OF NU FROM LITERATURE	BEST PRACTICE GUIDELINES
	<ul style="list-style-type: none"> • Intersection density (min 200 per square mile) • Pedestrian Infrastructure (sidewalks along 100% of street length) • Human-Scale(Building height to street ration of 1:3) • Low Vehicle Speeds (20mph) • Streetscape (60% sidewalk has trees) • components of accessibility 	<ul style="list-style-type: none"> • Auto-centric Streets (6,7,9,10,19,28,36) • Disconnected (6,7,9,10,24,28,36) • Auto oriented travel behavior (6,7,9,10, 13,19,28 ,36) •Lacks Pedestrian Infrastructure (6,7,9,10,19,28,36) 	<ul style="list-style-type: none"> •Metrics for measuring walkability are debated and some are subjective. But several factors are agreed upon such as narrow streets, low vehicle speeds, pedestrian scale environment, well managed streetscape, high connectivity (intersection density), access to amenities, and pedestrian safety infrastructure. (2,4,9,14, 15,16,17,18,19,20,24,26,35,38,39)
SUSTAINABILITY	HIGHLAND GARDEN VILLAGE	RIVERFRONT PARK	STAPLETON
	<ul style="list-style-type: none"> • Narrow streets: Avg 11' lanes • Intersection Density = 22intersections/ 27 Ac = 521 intersections per square mile • Pedestrian Infrastructure: 5' sidewalks • Human Scale: yes • Low Vehicle Speeds: posted 20 mph, Survey results needed for perceived speeds • Streetscape: trees lining over 60% of streetscape • See accessibility • Survey: 80% of participants feel safe/comfortable crossing the street 20% reported high vehicle speeds, 26.66% reported inattentive drivers. 93.34% of participants enjoyed walking in their neighborhood for reasons of aesthetics and active street life. 	<ul style="list-style-type: none"> • narrow streets: Avg 11' lanes • Intersection Density = 10 intersections/ 23-acres = 278 intersections per square mile • Pedestrian Infrastructure= 8' sidewalks • Human Scale: No, much higher ratio • Low Vehicle Speeds: 25mph on internal streets • Streetscape: Yes, trees lining over 60% of streetscape • See accessibility • Survey 86.67% of participants feel safe/comfortable crossing the street 20% reported high vehicle speeds and 33.34% reported inattentive drivers. 93.34% of participants enjoy walking through their neighborhood primarily for aesthetics and active street life 	<ul style="list-style-type: none"> • Narrow streets: ranging from 11-15' lanes (18) • Intersection density: 176 per square mile (19) • Pedestrian Infrastructure: 5'-7" sidewalks, minimal crosswalk safety. (49, 52) • Human Scale: yes • Low Vehicle Speeds: posted 30mph on internal streets, one study reported avg of 32% of cars exceeding speed limit • Streetscape: trees lining over 60% of streetscape, lacks pedestrian infrastructure. • See accessibility • Survey: 73.33% of participants feel safe/comfortable. 46.66% reported high vehicle speeds, 26.66% reported inattentive drivers. 86.66% of participants enjoy walking in their neighborhoods.
SUSTAINABILITY	NU GOAL METRICS	CRITIQUES OF NU FROM LITERATURE	BEST PRACTICE GUIDELINES
	<ul style="list-style-type: none"> •Building performance, solar orientation •Reduce reliance on fossil Fuels •solar, wind, biomass, geothermal •produced at neighborhood scale •Mode Choice 	<ul style="list-style-type: none"> •Low density (increased consumption/emission per capita) (3, 6 ,7,9,10,28,36) •Auto-Centric (mode choice- env impacts) (3,6,7,9,10 ,16,19,26,28,36) •Lacks accessibility to different amenities (7,9,10,13,36) 	<ul style="list-style-type: none"> • Compact and Dense housing is more environmentally sustainable (1,2,4,7,8,14,15,16,24,29,32,33,41) • High accessibility and mobility reduces emissions per capita (1,2,4,7,8,11,14,15,18,19,24,29,32,33,39,40,41)
SUSTAINABILITY	HIGHLAND GARDEN VILLAGE	RIVERFRONT PARK	STAPLETON
	<ul style="list-style-type: none"> • wind source energy for all public buildings and parks; xeriscape tree lawns; All homes in Highlands' Garden Village received the five-star rating from the Denver Homebuilders' Association's Built Green Program and are E-Star certified by Energy Rated Homes of Colorado; Energy Star Appliances installed in all buildings 30 tons (27.2 metric tons) of concrete from the old site was crushed and reused as road base; the project uses alternative energy sources such as wind-generated electricity for parks, civic buildings, and apartment buildings; and various recycled products such as wood, insulation, and siding were used in the construction of the homes and townhouses. (49,50) * See complete streets, accessibility 	<ul style="list-style-type: none"> • Compact and Dense: Yes, The building designs minimize exposed surface area for each unit as to maintain energy efficiency in heating and cooling. (48,51) • 20% water reduction, community recycling program, bike storage and proximity to public transit, indoor air quality improvements, xeriscaping landscape technique,and low emitting and regionally sources materials. (48,51) • The site is located in an high accessibility and mobility area with access to numerous forms of alternative transportation and high quality pedestrian and cycling infrastructure (48,51) 	<ul style="list-style-type: none"> • Stapleton meets Energy Star requirements with energy and water savings ranging from 40-70% over conventional design and construction. It is also the nationals largest recycling project, recycling over 6 million tons of concrete through development; Stapleton also implements vast greenspace and green infrastructure. (52,53) • Low Accessibility and lack smart transportation • sprawled and low density: impacting exposed surface area. (19,49,52)

COMPLETE STREETS AND “SMART” TRANSPORTATION:	NU GOAL METRICS <ul style="list-style-type: none"> • Multi-modal • shared space (safe for all users) low vehicle speeds, appropriate buffers • Du/parking space ratio (TOD is .6) • no more than 20% surface parking • Access to high LoS Transit (within 1/4 mile) 	CRITIQUES OF NU FROM LITERATURE <ul style="list-style-type: none"> • Auto-centric hierarchy (6,7,9,19,28,36) • Unsafe travel behavior (high speeds)(6,7,9,19,36) • Lacking in pedestrian and cycling infrastructure (6,7,9,19,35,36) • High unit/parking space ratio (< .6) (19,24) • Lacking bicycle storage (36) • Primarily surface parking (19,24) 	BEST PRACTICE GUIDELINES <ul style="list-style-type: none"> • Lane Width: 10’ lanes correlate with slower and safer vehicle speeds. Bike Lanes should be a minimum of 4’ with some form of buffer. Implementing bus only lanes provides higher LoS (Level of Service) that is crucial for a “complete Street.” (14,34,40,42,43,44) • Pedestrian/Cycling/Transit Infrastructure for “complete streets” including but not limited to: sidewalks, curb extensions, gateways, pinch-points, chicanes, bus bulbs, vehicle speed control elements, various bike lane treatments as well as streetscape elements. (14,34,40,42,43,44) • Limiting parking supply is a crucial element of influencing travel behavior and thus per capita emissions (8,11,32,34,44,46)
	HIGHLAND GARDEN VILLAGE <ul style="list-style-type: none"> • The streetscape at HGV is certainly progressive (see street sections) although with small sidewalks, minimal pedestrian infrastructure and no marked bicycle infrastructure It lacks a “complete” aspect. (48,49) • Access to moderate service transit • 27.2% of the site is surface parking • Survey: 60% of participants bike frequently or sometimes. 2/3 of them prefer to bike on greenspace or separate paths rather than on-street bike lanes. 	RIVERFRONT PARK <ul style="list-style-type: none"> • Riverfront park has moderate improvements to conventional street standards, although with ample sidewalks and a network of marked off-street bicycle lanes I would say they have achieved complete streets. • Access to high LoS transit (union station) • Majority of parking internally in buildings in garages (minimal surface parking) • Ratio undetermined • survey 80% of participants bike frequently or sometimes. 83.33% prefer to bike on greenspace or separate paths rather than bike lanes. 	STAPLETON <ul style="list-style-type: none"> • Stapleton has moderate improvements to conventional street standards on local roads, although the often vacant on-street parking essentially creates massive thru lanes that encourage higher speeds as one study showed (see smart transportation section) • Only about half of the residents have access to any transit, which is only moderate LoS • There is a large amount of surface parking at Stapleton, especially in northern section • Ratio undetermined. • Survey: 2/3 prefer bike frequently or sometimes. 80% prefer to bike on greenspace or on separate paths rather than bike lanes.
SMART LOCATION	NU GOAL METRICS <ul style="list-style-type: none"> •Urban Infill •adjacent to existing development •economically distressed area •cleaning up undesirable sites for use (Grey/brown field) 	CRITIQUES OF NU FROM LITERATURE <ul style="list-style-type: none"> • Low accessibility and mobility (6,7,9,10,13,19,26,27,28,36) • Located in the urban fringe or rural (3,6,7,9,10,28,36) • Disconnected from alternative transportation networks (3,6,7,9,19,36) • amenities fail due to lack of surrounding density (6,13) 	BEST PRACTICE GUIDELINES <ul style="list-style-type: none"> • Factors of Mobility/ Accessibility: travel speeds, pedestrian safety, land use proximity, multi-modal, connectivity, density, transit (14,34,40,42,44) • New development should occur within or next to an existing or planned high LoS (level of Service) transit network. (15 minute headway) (8,14,16,24,29,32,37,44) • New development should be connected to existing infrastructure and be in close proximity to a spectrum of service and amenities (8,14,16,24,29,32,37,44) • Municipalities should incentive developers to rehabilitate brown-field and Grey-field sites for use (3,5,14,16,24,47)
	HIGHLAND GARDEN VILLAGE <ul style="list-style-type: none"> • Urban infill: former amusement park • Accessibility/mobility: moderate accessibility, lacking in accessibility to work via alternative mode choice. • Economically distressed area: No. 2.42% poverty rate (HUD) • Greyfield, former Amusement Park (49,50) • Survey: 86.66% feel they have a variety of services and amenities within walking distance. 73.33% use a grocery store within walking distance. 40% work downtown or in a peripheral neighborhood, of these 2/3 drive to work primarily because it is the most convenient option. 	RIVERFRONT PARK <ul style="list-style-type: none"> • Urban infill: Yes • Accessibility/mobility: High • Economically distressed area: yes, 18.84% poverty (HUD) • Browfield and former rail yard (48) • Survey: 93.34% feel they have a variety of services and amenities within walking distance. 86.67% use a grocery store within walking distance. 2/3 work downtown or in a peripheral neighborhood, of these 40% drive to work, 30% bus and 30% walk or bike. 100% reported their mode choice is for convenience. 	STAPLETON <ul style="list-style-type: none"> • Urban Infill: Yes, former airport • Accessibility/Mobility: • Economically distressed area: No , 3.91% poverty rate • Greyfield, former Airport (52,53) • Survey: only 26.66% feel they have a variety of services and amenities within walking distance. This is primarily because the western portion is over a half mile away from any location offering these. All participants go to Quebec square to grocery shop, 26.66% are within 5 minutes and drive, 73.33% are within 10-minutes and drive. 53.33% work downtown or in a peripheral neighborhood, 80% drive and 20% bus. 87.5% reported their choice is for convenience.

COMPACT AND DENSE	<p>NU GOAL METRICS</p> <ul style="list-style-type: none"> • 7-10 Du/Ac is considered compact • Compact and Dense urban forms greatly impact accessibility/mobility and environmental sustainability 	<p>CRITIQUES OF NU FROM LITERATURE</p> <ul style="list-style-type: none"> • Varies widely across NU developments. (6,7,9,10,16,23,28,36) 	<p>BEST PRACTICE GUIDELINES</p> <ul style="list-style-type: none"> • Compact urban forms improve access, mobility, and service while reducing per capita emissions. (1,8,14,16,19,22,24,29,32,34,35,44) • Too high of densities have been correlated with lower QoL (Quality of Life) and social withdraw, thresholds undetermined and require further research (2,16,18,21,22,27,33)
	<p>HIGHLAND GARDEN VILLAGE</p> <ul style="list-style-type: none"> • 306 Units on 27-Acres(gross) 13.5-acres(net) Gross Density: 11.33 Du/Ac (49,50) Net Density: 22.67 Du/Ac (49,50) 	<p>RIVERFRONT PARK</p> <ul style="list-style-type: none"> • This urban infill project contains 1,859 housing units on a 23-acre site adjacent to downtown Denver. Gross Density: 80.69 Du/Ac (48) Net Density: 130 Du/Ac (48) 	<p>STAPLETON</p> <ul style="list-style-type: none"> • 12,000 units on 4,700 Acres =2.6 Du/Ac (52)
MIXED USE AND DIVERSITY	<p>NU GOAL METRICS</p> <ul style="list-style-type: none"> • Min 4 land uses within the neighborhood • a “variety of housing options” to ensure a range of demographics and socioeconomic spectrum. 	<p>CRITIQUES OF NU FROM LITERATURE</p> <ul style="list-style-type: none"> • NU does this well, majority of developments achieve this goal (5,7,9,13,18,28,36) • Although usually too low of densities to support amenities (6,9,13) • One study shows demographic and economic inclusion/variation (7) 	<p>BEST PRACTICE GUIDELINES</p> <ul style="list-style-type: none"> • Ensuring a wide range of services and amenities around new development correlates with lower VMT and a higher QoL (8,14,16,18,20,24,32,44) • Providing a wide range of housing types and prices correlates with stronger socio-economic diversity amongst residents (2,8,16,18,20,22,24,27)
	<p>HIGHLAND GARDEN VILLAGE</p> <ul style="list-style-type: none"> • 11 different on-site land uses and 7 housing options (52 single family, 20 carriage homes, 38 town-homes, 63 apartments for seniors, 74 rental apartments, 33 cohousing units and 26 live/work lofts. (49,50) • 20% of the homes were priced affordable to households earning 50% or less of the area median income. (49,50) • Survey: Demographic What types of people live in your neighborhood? (12) families, (8) older couples, (6) seniors, (3) young adults 53.33% feel their neighborhood is diverse 13.33% reported “hard to tell” 	<p>RIVERFRONT PARK</p> <ul style="list-style-type: none"> • Over 8 housing styles ranging from studio apartments to luxury penthouses, 10% of all units are affordable. (48) • 14 residential project, with affordable one-bedroom units starting off at \$180,000 and luxury penthouse units starting off at \$1,028,000. For example, The Glass House contains 73 different floor plans for their units including affordable one-bedroom units to luxury penthouse units. (48) • Approximately 13 different uses internally and in surrounding area (48, 55) • Survey: What types of people live in your neighborhood? (2) families, (12) older couples (6) seniors, (2) young adults. 20% felt their neighborhood is diverse, 46.67% reported hard to say 	<p>STAPLETON</p> <ul style="list-style-type: none"> • 12 design typologies to ensure a variety of household incomes and family profiles; housing prices varied from \$123,000 - \$530,000 (52) • Approximately 12 different land uses internally, including schools, recreation, commercial, retail, office, residential, etc (52,55) • Survey: What types of people live in neighborhood? (15) families, (7) older couples, (6) seniors, (3) young adults 26.66% feel their neighborhoods are diverse, 53.33% said no, 20% said hard to say.

ACCESSIBILITY	GOAL METRICS	CRITIQUES OF NU FROM LITERATURE	BEST PRACTICE GUIDELINES
	<ul style="list-style-type: none"> Land Use Proximity (mixed uses and densities) Multi-Modal Motor vehicle conditions (connected, safe) Adjacent to existing development Access to transit (1/4 Miles) 	<ul style="list-style-type: none"> Disconnected from high frequency/quality transit (6, 7,9,10,19,36) Auto-centric hierarchy (6,7,9,19,28,36) Lacks connections to amenities (7,9,10,13,36) Inconsistency across NU developments (7,9,10,28,36) Transit/bike infrastructure and access (10,19,28,36) 	<ul style="list-style-type: none"> Factors of Mobility/ Accessibility: travel speeds, pedestrian safety, land use proximity, multi-modal, connectivity, density, transit (14,34,40,42,44) Compact urban forms improve access, mobility, and service while reducing per capita emissions. (1,8,14,16,19,22,24,29,32,34,35,44) Metrics for measuring walkability are debated and some are subjective. But several factors are agreed upon such as narrow streets, low vehicle speeds, pedestrian scale environment, well managed streetscape, high connectivity (intersection density), access to amenities, and pedestrian safety infrastructure. (2,4,9,14, 15,16,17,18,19,20,24,26,35,38,39)
TRADITIONAL NEIGHBORHOOD STRUCTURE	HIGHLAND GARDEN VILLAGE	RIVERFRONT PARK	STAPLETON
	<ul style="list-style-type: none"> Land Use Proximity (mixed uses and densities) Multi-Modal, Motor vehicle conditions (see smart transportation) Adjacent to existing development : yes Access to transit (1/4 Miles) Survey: 86.66% feel they have a variety of services and amenities within walking distance. 73.33% use a grocery store within walking distance. 40% work downtown or in a peripheral neighborhood, of these 2/3 drive to work primarily because it is the most convenient option. 	<ul style="list-style-type: none"> The project has multiple forms of public transit, from AM-TRAK rail, light rail, and regional and community buses to bike and car sharing programs Compact and Dense (48) Avg 15' sidewalks, 11' lanes with ample pedestrian safety measures and streetscaping (See Figure __) Survey: 93.34% feel they have a variety of services and amenities within walking distance. 86.67% use a grocery store within walking distance. 2/3 work downtown or in a peripheral neighborhood, of these 40% drive to work, 30% bus and 30% walk or bike. 100% reported their mode choice is for convenience. 	<ul style="list-style-type: none"> Land Use Proximity (mixed uses and densities) Transport Network Connectivity Multi-Modal, Motor vehicle conditions (see smart transportation) Adjacent to existing development Access to transit (1/4 Miles) Survey: only 26.66% feel they have a variety of services and amenities within walking distance. This is primarily because the western portion is over a half mile away from any location offering these. All participants go to Quebec square to grocery shop, 26.66% are within 5 minutes and drive, 73.33% are within 10-minutes and drive. 53.33% work downtown or in a peripheral neighborhood, 75% drive and 25% bus. 87.5% reported their choice is for convenience.
	GOAL METRICS	CRITIQUES OF NU FROM LITERATURE	BEST PRACTICE GUIDELINES
	<ul style="list-style-type: none"> Central, High Quality, Active community spaces Integrating recreational greenspace while preserving sensitive habitats Maximum half mile from recreational space Livability Street scape Community Accessibility Clear center and edge 	<ul style="list-style-type: none"> NU does have active community spaces (5,7,27,28,36) <ul style="list-style-type: none"> New Urbanism integrates greenspace and recreation areas (1,5,9,27,28,35,36) low accessibility and mobility (see accessibility) no measurable increase in “community” (7,9,12,27,28,36) Markets “community” (7,12,27,28,36) Streetscape lacks pedestrian infrastructure (6,7,9,10,19,28,36) 	<ul style="list-style-type: none"> Properly designing and placing shared spaces has a significant impact on Sense of Community (SoC) and Quality of Life (QoL) and public health and should be thoroughly integrated into new development. (2,4,15,16,18,20,27,32,35,41) Integrating greenspace into our built environment is crucial for public health, community, green infrastructure, and habitat and species conservation. (15,16,17,20,24,29,33,37,38,41) Factors of Mobility/ Accessibility: travel speeds, pedestrian safety, land use proximity, multi-modal, connectivity, density, transit (14,34,40,42,44)
	HIGHLAND GARDEN VILLAGE	RIVERFRONT PARK	STAPLETON
	<ul style="list-style-type: none"> 3.2 acres of public open space in the form of a plaza, parks, community gardens, and playgrounds (49,50) 3.2 acres of public open space in the form of a plaza, parks, community gardens, and playgrounds (49,50) Although minimal green infrastructure has been installed (49,50) accessibility: (see accessibility) Survey results for livability: 80% of residents personally know a few or more neighbors 80% of these occasionally or often socialize with these neighbors 46.67% feel as though they have a sense of community 73.33% feel the parks/public spaces are “safe and inviting” 80% of these participants feel comfortable using the public space 80% use this space occasionally or often 	<ul style="list-style-type: none"> Riverfront Park Community Foundation.: arts and education for the community The Riverfront Park neighborhood also contains numerous public spaces. The Commons Park is a 19-acre recreation space, preserve approximately 40 percent of the site in native habitat, including aquatic, wetland, riparian, and upland communities. (48) very accessible environment with high quality streetscape Survey results for livability 73.33% of residents personally know a few or more neighbors 73.33% occasionally or often socialize with these neighbors 46.67% feel as though they have a Sense of Community 2/3 feel the parks/public spaces are “safe and inviting” 2/3 feel comfortable using this space 73.33% use these spaces occasionally or often 	<ul style="list-style-type: none"> Stapleton has 7 community centers throughout the massive 4,700 acre development 80-Acre park, 2 greenways, 123-acre wildlife refuge (52,53) accessibility: (see accessibility) streetscape: (see walkability) Survey 80% of residents personally know a few or more neighbors 2/3 of residents occasionally or often socialize with these neighbors 60% feel as though they have a sense of Community 100% of participants feel the parks/public spaces are “safe and inviting” and feel comfortable using these spaces 86.67% use these spaces occasionally or often

APPENDIX 1 : MATRIX CODE

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APPENDIX 2: SURVEY QUESTIONS:

WALKABILITY:

1. how does it feel to cross the street? DO you feel like cars are paying attention to you?
 - a. Are high vehicle speeds and inattentive drivers an issue in your neighborhood?
2. do you enjoy walking through this area? Why? What features make it pleasant?

ACCESSIBILITY:

1. Do you feel like you have access to a variety of services and amenities within walking distance of your home?
 - a. How far away is your usual grocery store?
2. Do you work outside your home? If so how far do you have to travel for work or school?
 - a. What method of travel do you primarily use to get to work or school?
 - i. Why is this your primary choice?

COMPLETE STREETS:

1. Do you ride a bike ever?
2. Where do you feel most comfortable riding and why?
3. Do you skateboard? _____
4. Where do you feel most comfortable skateboarding and why?
5. Do you do more riding or skating on the sidewalk or on the street?

COMMUNITY

1. How many other residents of the neighborhood have you met?
2. How often do you get together with your neighbors for an event or gathering?
3. Do you have a sense of “community” in your neighborhood?

GREENSPACE

1. Does the park in your neighborhood feel safe and inviting?
2. Do you feel comfortable using public spaces in your neighborhood?
3. How frequently do you use this park or public space?

DEMOGRAPHIC DIVERSITY

1. What types of people live in your neighborhood?
2. Do you feel like your community is diverse? How so?